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ABANDONED WELL PROGRAM
VERSION 2.0
VOLUME I

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EXECUTIVE SUMMARY
TASK 37
ABANDONED WELL PROGRAM

The Program Manager's Office for the Rocky Mountain Arsenal Contamination Cleanup (PMO) is concerned with the potential for contaminant migration between aquifers through unused and undocumented wells on the Rocky Mountain Arsenal (RMA). PMO established Task Order 37 as the first phase of work to address this problem. The objectives of Task 37 were to locate, examine, and properly close wells on RMA that may be allowing, or could potentially allow migration of contamination from upper aquifers to deep aquifers.

Due to schedule and funding constraints, it was not intended that Task 37 would close all of the unused wells on RMA. The technical approach to Task 37 was structured in such a way that unused wells were closed on a prioritized basis according to their potential to adversely impact deep aquifers.

The study area for Task 37 was limited to those areas of RMA that are within or downgradient of potential sources of contamination. A compilation and evaluation of existing data was performed to identify information on the locations, construction, and condition of wells within the study area. The wells were prioritized based on this information and field searches were conducted to locate those wells assigned a high priority.

The results of the evaluation indicated that as many as 410 unused wells exist within the Task 37 study area. The Task 37 field searches included 189 wells of which 91 were located. Ground-based magnetometer surveys that were performed at the reported locations of fifteen wells that were not located failed to indicate the presence of subsurface well casing. It is the opinion of PMO that these wells do not exist as reported.

A total of 39 wells were closed under Task 37. Closure methods followed standard procedures in use by water well contractors in accordance with USATHAMA Quality Assurance/Quality Control procedures. These methods are in compliance with State of Colorado standards for well sealing.

Task 37
09/23/88

1.0 INTRODUCTION

1.1 BACKGROUND

The Rocky Mountain Arsenal (RMA), located in western Adams County northeast of Denver, Colorado, was established in 1942 as a manufacturing facility for the production of chemical munitions. In 1946, excess facilities at the South Plants area were leased by the Julius Hyman Company for pesticide production. The chemical division of the Colorado Fuel and Iron Company leased several facilities in the same area in the early 1950s. During the early 1950s the Shell Chemical Company purchased the Julius Hyman Company and subsequently leased facilities in the South Plants area for pesticide production.

Before RMA was established, the area was devoted to agricultural and residential use. As many as 250 water wells for irrigation, stock watering, and domestic use existed on what is now RMA property. Information about the wells that predated RMA (pre-1942 wells) indicates that approximately one-half of the wells are greater than 30 inches in diameter and probably hand-dug. The reported well depths range from 15 to 1000 feet. Approximately 40 of the pre-1942 wells were reported as "filled".

In addition, since the establishment of RMA in 1942, hundreds of monitoring wells have been installed on the property (post-1942 wells). The majority of these wells are in good condition and still in use. It has been established, however, that approximately 200 of the post-1942 monitoring wells may no longer be useable for water-level or ground-water quality monitoring (ESE, 1986, RIC 87013R01).

1.2 OBJECTIVES

The Program Manager's Office for the Rocky Mountain Arsenal Contamination Cleanup (PMO) is concerned with the potential for contaminant migration between aquifers through unused and undocumented wells on RMA. PMO began the first phase of addressing this problem by establishing Task Order Number 37. The objectives of Task 37 were to locate, examine, and properly close wells on RMA that may be allowing, or could potentially allow migration of contamination from upper aquifers to deeper aquifers.

1.3 PHYSICAL SETTING

1.3.1 Location

The study area for Task 37 was the portion of RMA that encompasses Sections 22-28, 33-36, 1-4 and 9, and those portions of Sections 19, 30, and 31 west of the eastern boundary of the First Creek Alluvium (Figure 1). The study area was limited to this portion of RMA because it encompasses all unused wells that are downgradient of known sources of contamination.

Sources of contamination at RMA are attributable to disposal practices which were concentrated in Sections 26, 35, and 36 and unintentional spills of raw materials, process intermediates, and end products that have occurred in the manufacturing areas.

1.3.2 Geology

Quaternary alluvial and eolian deposits, locally referred to as alluvium, cover most of RMA. The alluvium is composed primarily of alluvial fill, dune sand, and glacial outwash, which contains cobbles, boulders, and beds of volcanic ash as well as gravels, sands, silts, and clays. The thickness of the surficial alluvium ranges from approximately 30 to 130 feet. The thicker deposits represent filling of paleochannels cut into the underlying Denver Formation.

The alluvium lies on a bedrock surface formed by the late Cretaceous-early Tertiary Denver Formation that consists of 250 to 400 feet of clay-shale and siltstone interbedded with poorly sorted, fine-to-medium grained sandstone. Lignite beds and carbonaceous shales are common, as are volcanic fragments and tufaceous materials. The interbedded sandstones are mainly lenticular and sinuous and are discontinuous to semi-continuous across the site.

The late Cretaceous Arapahoe Formation underlies the Denver Formation at depths of approximately 300 to 500 feet below the land surface. The Arapahoe Formation has not been extensively characterized in the study area, but elsewhere it is described as consisting of 500 to 700 feet of interbedded conglomerates, sandstones, siltstones, and shales (Robson, 1984). A generalized geologic cross-section of the area is shown in Figure 2.

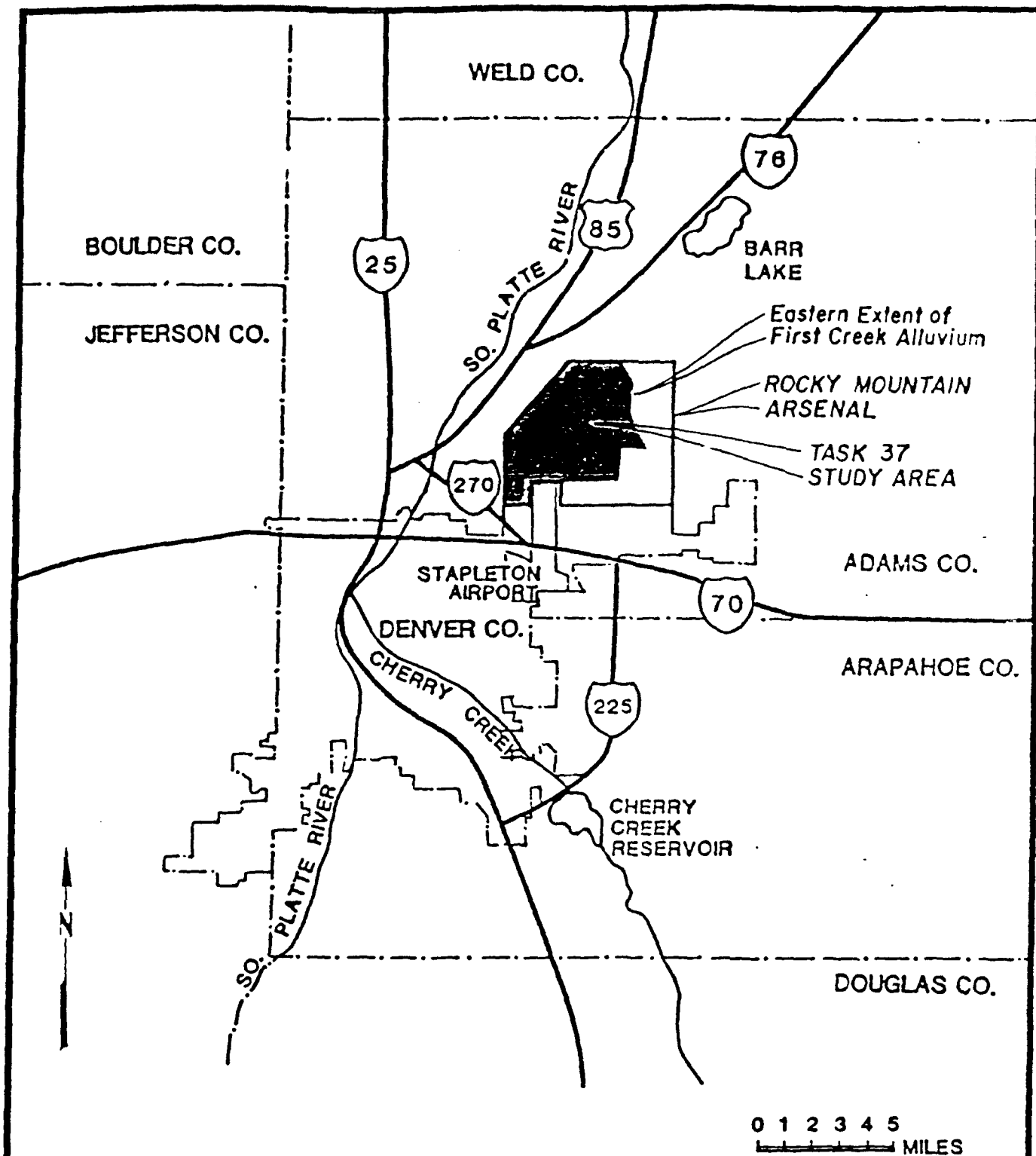


Figure 1

STUDY AREA LOCATION MAP

Rocky Mountain Arsenal, Task 37
Prepared by: Geraghty & Miller, Inc.
For Ebasco Services, Inc.

Task 37

09/23/88

Prepared for:

U.S. Army Program Manager's Office for
Rocky Mountain Arsenal Contamination Cleanup
Aberdeen Proving Ground, Maryland

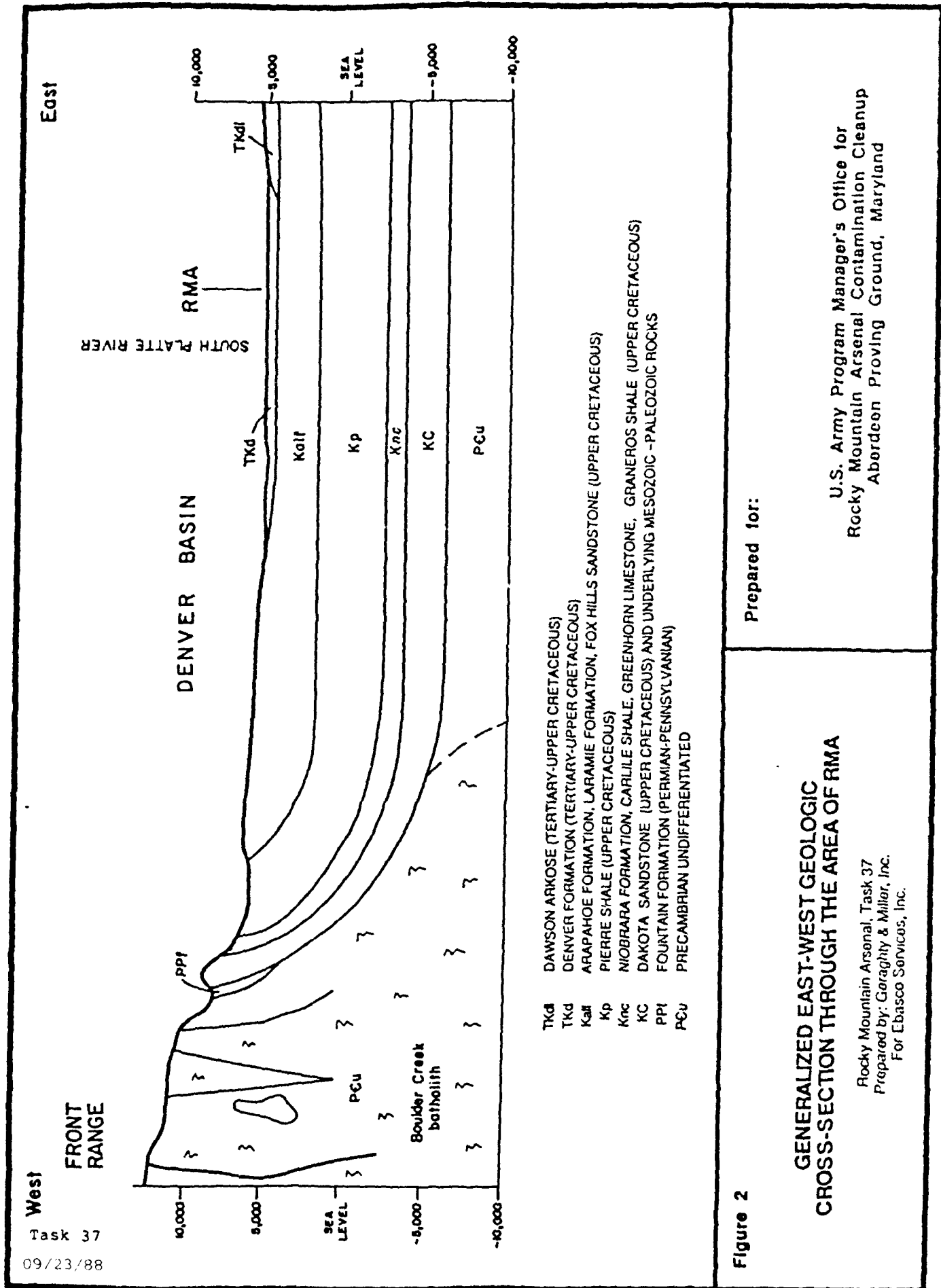


Figure 2

**GENERALIZED EAST-WEST GEOLOGIC
CROSS-SECTION THROUGH THE AREA OF RMA**

Rocky Mountain Arsenal, Task 37
Prepared by: Garaghty & Miller, Inc.
For Ebasco Services, Inc.

Prepared for:

U.S. Army Program Manager's Office for
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Aberdeen Proving Ground, Maryland

1.3.3 Groundwater Hydrology

Groundwater resources in the study area are part of the Denver groundwater basin. The four major bedrock aquifers of the Denver basin are the Laramie-Fox Hills Sandstone, the Arapahoe Formation, the Denver Formation, and the Dawson Arkose. Surficial deposits and crystalline rocks along the Front Range also yield enough water to be considered aquifers in some areas. The Arapahoe Formation, the Denver Formation, and the unconsolidated Quaternary alluvial deposits are the aquifers of primary concern at RMA.

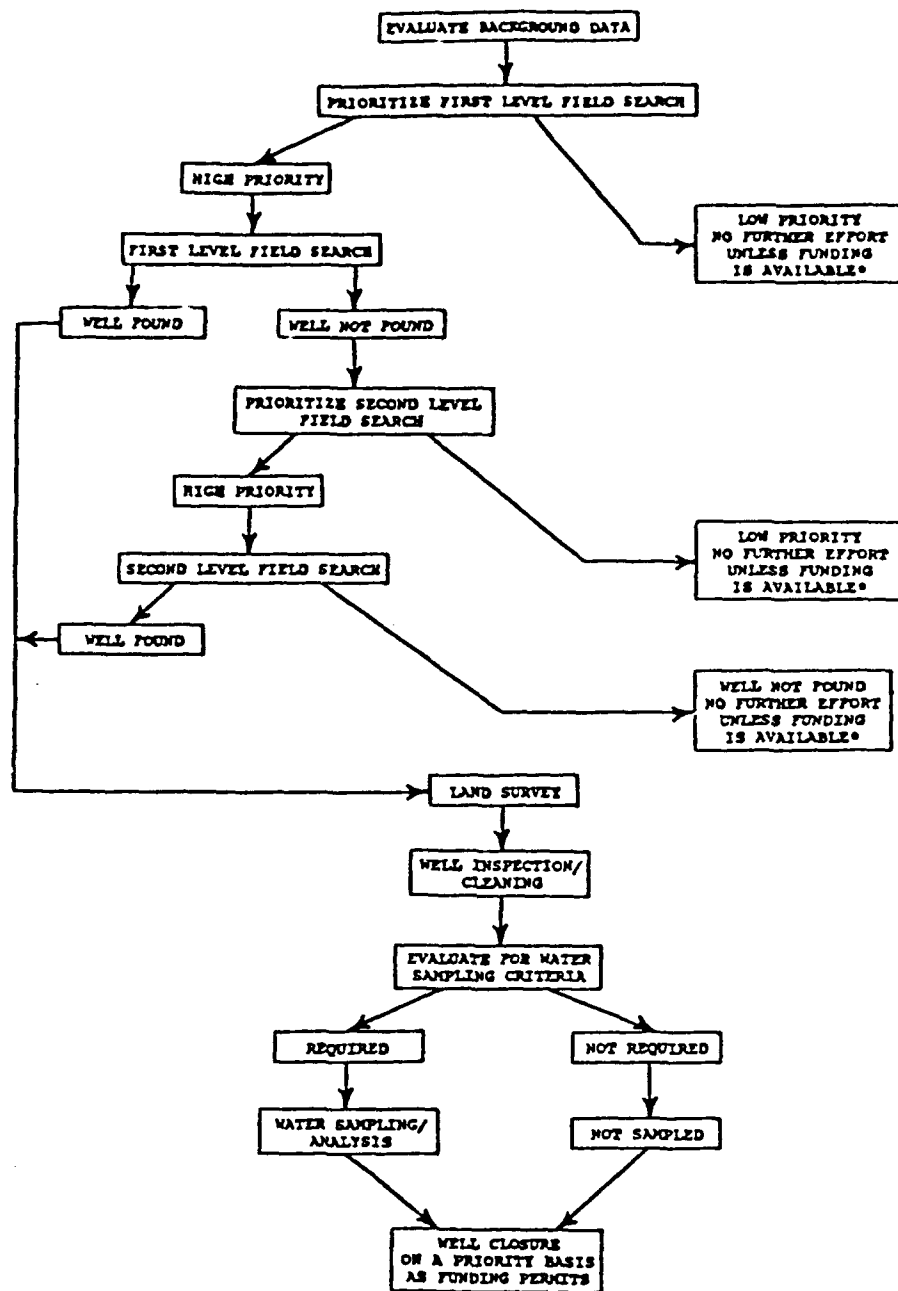
The alluvial groundwater system consists of unconsolidated surficial deposits and a zone of weathered bedrock that separates the alluvium from the underlying Denver Formation. Groundwater within the alluvial system exists under water-table conditions. Groundwater within the Denver Formation occurs under confined conditions. Migration of groundwater in the Denver Formation occurs preferentially within lenticular sand deposits that are in contact with the overlying alluvium where they subcrop at the bedrock surface.

In the vicinity of RMA, a shale-claystone layer, ranging in thickness from 75 to 200 feet separates the Denver Formation from the underlying Arapahoe Formation (Romero, 1976, RIC81266R69). Therefore, the groundwater systems of *immediate concern* at RMA are the Denver Formation and the alluvium. The presence of deep pre-1942 wells that may not have been closed in a manner that prevents migration of groundwater from these upper aquifers to the Arapahoe Formation is a potential threat to the water quality in the Arapahoe Formation.

1.4 SCOPE OF THE TASK 37 ABANDONED WELLS CLOSURE PROGRAM

Task 37 was established as the first step in addressing the objective of closing unused and abandoned wells on RMA. Due to schedule and funding limitations, it was not intended that Task 37 would close all of the unused wells on RMA. Because of this, the technical approach for Task 37 was structured in such a way that unused wells were closed on a prioritized basis according to their potential to adversely impact deep aquifers. The technical approach followed is outlined in the flow chart in Figure 3.

Limiting the Task 37 study area to those portions of RMA that are within or downgradient of potential sources of contamination was the first step in the prioritization process. Subsequent steps included the compilation and evaluation of well



* TASK 37 IS ONLY THE FIRST OF THE PMO'S EFFORTS TO CLOSE ABANDONED WELLS AND HAS STRICT FUNDING AND SCHEDULE LIMITATIONS. CLOSURE OF LOW-PRIORITY WELLS WILL BE ADDRESSED IN FUTURE EFFORTS.

Figure 3

FLOW CHART SHOWING TECHNICAL APPROACH
TO TASK 37
Rocky Mountain Arsenal, Task 37
Task 37 Prepared by: Geraghty & Miller, Inc.
for Ebasco Services, Inc.
09/23/88

Prepared for:

Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

construction data, a first level of effort field search to locate and examine wells exposed at the land surface, and a second level of effort field search to locate high priority wells that were not located during the first level field search. These steps are described in the following section.

2.0 WELL SEARCH

2.1 COMPILATION/EVALUATION OF EXISTING DATA

A compilation and evaluation of existing data were performed to identify information on the location, construction, and condition of the pre-1942 wells and to identify the post-1942 wells that are no longer in use or considered unusable for further water quality sampling or water-level measurement. Sources of information that were reviewed included the following.

- . The Shell I, Shell II, and Juris computer/microfilm databases.
- . RMA Information Center well records and documents.
- . Historical aerial photographs of RMA from RMA files, the U.S. Geological Survey, and commercial suppliers.
- . Historical U.S. Geological Survey topographic maps.
- . The technical plan for Tasks 4/44, the Water Quantity/Quality Survey at RMA.
- . The "Report on Pre-1942 Wells" prepared in 1985 by Morrison-Knudsen Engineers, Inc. for Shell Chemical Company.
- . Historical leasehold information for RMA property included in the property acquisition information collected by the Department of Justice.
- . The U.S. Army Corps of Engineers records of the well closures completed in the 1960s.
- . Water rights and well registration records at the Colorado State Engineer's Office.

Data regarding the location and number of pre-1942 wells on RMA were compiled from a 1946 RMA file document titled "Data of Wells on RMA" and from real estate appraisals included in the property acquisition information collected by the Department of Justice. Abandoned or unused post-1942 monitoring wells were identified through the D.P. Associates' database and the results of the Task 4 well evaluation (RIC 86317R01). Any well designated as abandoned or unused in the D.P. Associates' database or of "unacceptable" construction for future monitoring purposes by the Task 4 well evaluation was included in Task 37.

A total of 410 wells (129 pre-1942 wells and 281 post-1942 wells) was included in Task 37. Several of the post-1942 wells originally included in Task 37 have since been designated for continued use. A list of these wells is provided in Appendix A. The post-1942 wells are designated by their RMA monitoring well number. The pre-1942 wells use a similar numbering scheme that incorporates the section number and well number; however, the third character of the designation is an "A" to distinguish these from the post-1942 wells. Wells were designated with a "GM-#" extension when their locations could not be reconciled with historically reported well locations.

Available data regarding well construction information and locations for the pre-1942 wells on RMA were found to be incomplete and contradictory. To evaluate the available information, data from each source were compiled in a database. These databases were then compared to verify reported location and well construction information. Listings of these databases are included in Appendices B through E. A comparative database that lists reported well information from all of the sources and illustrates the contradictory nature of the available data is provided in Appendix F.

2.2 FIELD SEARCHES

2.2.1 Prioritization Scheme

Based upon the information compiled from the above mentioned databases, the wells were prioritized according to the potential for a well to adversely impact deep aquifers. This prioritization was used to determine which of the wells would be included in the first level field search. Those pre-1942 wells that were not located during the first level field search were prioritized again, according to the same criteria and the applicability of available search techniques, to determine which wells would be included in the second level field search.

Prioritization of the wells was accomplished by completing priority sheets. The priority sheets categorized the wells according to characteristics which have an affect on the extent to which a well may adversely impact deep aquifers. The prioritization was accomplished by assigning weighted point values for each characteristic. The total score for each well established its rank in the prioritization.

Figure 4 is the first level field search priority list which prioritizes the wells in five categories. The first category is the location of the well in relation to known contaminant plumes. The location of the contaminant plumes was defined by the maps generated for Task 4/44 from the initial screening report based on sampling in early 1986. A composite map of contaminant plumes in both the Denver Formation and the alluvium was used to assess this category since the depth of the wells was often unknown. The second category is the aquifer(s) penetrated by the well. A high priority was given to those wells that penetrate deep aquifers or more than one aquifer. The third category is the age of the well. Older wells were given a high priority since their field locations and well construction details were not known. The fourth category is the reported depth of the well. Deep wells were assigned a high priority. The final category allowed for the inclusion of a well in the field search at the request of a member of the Organizations and State (OAS) or for some reason other than its potential to adversely impact deep aquifers. A well was included in the first level field search if it scored a total of 25 points or more. A list of the wells included in the first level field search is provided in Appendix A.

Pre-1942 wells that were not located during the first level field search were prioritized for a second level search effort. Post-1942 wells were not included in the second level field search. Figure 5 is the second level field search priority list which prioritizes the wells in six categories. In addition to the potential for the well to adversely impact deep aquifers, this list incorporates the suitability of available search methods for finding a well. The first category is the previously determined first level priority. Wells with a high first level priority received a high score. The second category is the aquifer(s) penetrated by the well. A high priority was given to those wells that penetrate deep aquifers or more than one aquifer. The third category is the complexity of the associated contaminant problem. Wells located in an area associated with multiple contaminants were given the highest priority. The fourth category is the applicability of using an available technique to locate a well. The fifth category is the number of wells in the immediate area. This category was included in an attempt to optimize costs for the additional searches. A well was included in the second level field search if it scored a total of 30 points or more. A list of the wells included in the second level field search is provided in Appendix A. During the first level prioritization of the wells, if no information existed for a well in a particular category, it was given the highest score possible to ensure its inclusion in the search. During the second level of prioritization, these wells were given a "minimum possible" score so that time and effort would be spent

Figure 4. First Level Field Search Priority List.

WELL NUMBER: _____

LOCATION: Twnshp _____ S Rng _____ W Section _____
Qtr _____ Qtr _____

In plume	15
Downgradient of plume	10
Outside plume, not downgradient	5

AQUIFER: _____

Arapahoe or Arapahoe and any other aquifer	15
Denver and alluvium	10
Denver	5
Alluvium	3

AGE: _____

pre-1942	10
post-1942	5

DEPTH: _____ feet

Greater than 200 feet	10
100 to 200 feet	5
less than 100 feet	1

ADDITIONAL: _____

Requested	25
Physically hazardous	10

TOTAL (search if ≥ 25 points, 75 maximum):

Figure 5. Second Level Field Search Priority List.

WELL NUMBER: _____

LOCATION: Twnshp _____ S Rng _____ W Section _____
Qtr _____ Qtr _____

FIRST LEVEL FIELD SEARCH PRIORITY: _____

Greater than 40	15
25 to 40	8

AQUIFER*: _____

Denver or Arapahoe	5
Alluvium	0

ASSOCIATED CONTAMINANTS: _____

More than one plume	15
One plume	10
Downgradient of plume	5
Outside plume, not downgradient	2

APPLICABILITY OF ALTERNATE METHOD: _____

Suitable methodology	10
Potential problems	1

ASSOCIATED WELLS: _____

Several to be located	10
Solitary well	4

ADDITIONAL: _____

Requested	25
-----------	----

TOTAL (search if ≥ 30 points, 75 maximum):

* Inferred from depth if unknown

searching for wells known to be of high priority. The priority sheets for each well are included in the well files in Appendix G.

2.2.2 Field Search Methods

2.2.2.1 First Level Field Search

The first level field search was conducted to confirm the locations of wells with a high first level search priority. A total of 189 wells (117 pre-1942 wells and 72 post-1942 wells) was included in the first level field search. A list of these wells is provided in Appendix A. The first level field search consisted of a site visit to the reported location of a well and a visual search to confirm the well's location. A hand-held scanning fluxgate gradiometer was used to supplement the visual search.

When a well was located, it was staked and labelled for land surveying, a sketch of the well's location was made, and the condition of the well including the diameter of the casing, the open depth, and the height of the casing above land surface was recorded. If a well was not located but a subsurface magnetic anomaly of the appropriate configuration and intensity to be a well casing was identified, the location of the magnetic anomaly was staked and labelled for subsequent excavation. *The information recorded during the first level field search is included in the well files in Appendix G.*

2.2.2.2 Second Level Field Search

The second level field search was conducted to locate high priority wells that had not been located during the first level field search. A total of 24 wells was included in this field search. A list of these wells is included in Appendix A. The second level field search consisted only of pre-1942 wells since surveyed locations for the post-1942 wells were known. The second level search effort consisted of three phases that utilized excavation and geophysics to attempt to locate wells that were not visible at the land surface.

The first phase of the second level field search involved excavating with a backhoe at magnetic anomalies that were identified during the first level field search. If no anomaly had been identified for a particular well, the excavation was done at the reported location of the well after this location had been staked by land surveyors. Excavations at the anomalies continued until the source of the anomaly was identified.

Excavations at reported well locations were limited to 20 feet by 20 feet by approximately 10 feet deep. Two wells, 26A01 and 30A08, were located in this manner.

Six of the wells included in the second level field search (02A02, 04A11, 04A13, 09A12, 31A09 and 36A01) were given a high search priority because an anomaly had been identified at the reported well location during the first level search. These wells were not included in the other phases of the second level field search because once the anomaly was excavated, and no well casing was found, there was no longer a reason to consider them high priority wells.

The second phase of the second level field search involved performing magnetometer surveys in the vicinity of the reported well locations. An EDA Instruments Omni IV proton precession magnetometer/gradiometer was used to conduct the magnetometer surveys. An approximately 300 foot by 300 foot grid was established centered on the surveyed reported location of the well. The surveys were conducted by taking total magnetic field intensity measurements every 10 feet along lines spaced at 10 foot intervals across the grid. These data were stored in the magnetometer's computer memory and downloaded onto a computer at the end of each day. The data were then reduced and contoured to identify magnetic anomalies within the surveyed area. Cultural features in the vicinity of the surveys were recorded to aid in the interpretation of the data. Interpretation of the magnetic data was based on information from Breiner (1973), Frischknecht, et al. (1983) and Jachens (1986). A summary of the interpretation rationale used to identify anomalies associated with well casings is presented by Martinek (1988). Sketches of the survey grids and cultural features are included in the well files in Appendix G. The contoured relative total vertical magnetic field data for each of the surveys conducted are shown in Plates 4 through 17. The grids were established with line 150, position 150 at the surveyed reported locations of the wells as shown in Plate 3.

If the contoured magnetic data identified anomalies near the perimeter of the grid that were not attributable to cultural features, the grid was extended and additional magnetic data were recorded to characterize these anomalies. In some instances, physical features, such as property boundaries or fence lines, limited the dimensions of the magnetometer surveys to less than 300 foot by 300 foot grids.

The final phase of the second level field search involved excavating at magnetic anomalies which were interpreted as identifying the location of a buried well casing.

Six wells (02A03, 09A02, 23A04, 24A02, 24A06, and 26A03) were located in this manner. The magnetic anomalies that characterized these wells are indicated on contour maps of the relative total magnetic field intensity compiled during the magnetometer surveys (Plates 4 through 17).

2.2.3 Results of the Task 37 Field Program

The technical approach to Task 37 was structured to accommodate the differences between the prioritization and closure requirements of the pre-1942 wells and post-1942 wells. Because these two sets of wells presented different requirements for the field searches, the results of the field searches are presented separately for each of the groups. Table 1 presents the results of the Task 37 field program both as the total number of wells searched for, found and not found, and as percentages that represent the success rate of each phase of the field program.

There were 129 pre-1942 wells identified for inclusion in Task 37. Of these, 117 wells passed the first level prioritization and were included in the first level field search. During the first level field search, 49 of these 117 wells were located, 7 wells were reported plugged by the COE, and 4 wells were not searched for due to access constraints. Those wells not searched for due to access constraints will be included in PMO's continuing efforts to close all of the unused wells on RMA. Of the 57 wells not located during the first level field search, 23 wells were included in the second level field search. During the second level field search, 8 wells were located. The well survey coordinates for the pre-1942 wells that were located during the field searches are contained in Appendix H.

Of the 58 pre-1942 wells that were located during the Task 37 field search, 24 were hand-dug wells and 34 were drilled, cased wells. Of the 24 hand-dug wells, 14 were filled and 10 were open. The well casings of all but one of the drilled wells (31A04) were blocked with obstructions. The condition of each of the wells located is described in the well files in Appendix G.

The first level field search incorporated the seven wells reported plugged by the COE in 1960 (Table 2). A visual inspection of the reported locations of these wells indicated that the plugging operations had indeed occurred as recorded. Pieces of surface casing and evidence of cementing operations were visible at these sites. Therefore, it was assumed that these wells were closed in a proper manner, and need no further attention.

Table 1. Results of the Task 37 Field Program.

	Pre-1942 Wells	Post-1942 Wells	Total
Wells Included in Task 37	129 31%	281 69%	410 100%
Wells Included in the Task 37 First Level Field Search	117 91%	72 26%	189 46%
Wells Found During the Task 37 First Level Field Search	49 42%	26 36%	75 40%
First Level Field Search Wells Plugged by COE	7 6%	0 0%	7 4%
First Level Field Search Wells Not Searched for Due to Access or Logistical Constraints*	4 3%	20 28%	24 13%
Wells Not Found During the Task 37 First Level Field Search	57 49%	26 36%	83 43%
Wells Included in the Task 37 Second Level Field Search	23 40%	0 0%	23 27%
Wells Found During the Task 37 Second Level Field Search	8 35%	0 0%	8 35%
Wells Not Found During the Task 37 Second Level Field Search	15 65%	0 0%	15 65%
Task 37 Field Program Success Rate (Wells Included in Field Searches Only)	49%	36%	44%

Percentage figures shown indicate the success/failure rate for each stage of the field program. They are not based on the total number of wells included in Task 37.

* These wells will be included in FMO's continuing effort to close all of the unused wells on RMA.

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Table 2. Task 37 Wells Reported Plugged by the U.S. Army Corps of Engineers, 1960.

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 22				
	22A01	SW SE Sec 22	500	6
	22A03	SW NE Sec 22	500	6
Section 23				
	23A05	NE NW Sec 23	520	-
Section 24				
	24A01	SE SE Sec 24	-	-
Section 27				
	27A01	NE NW Sec 27	620	96
	27A02	NW NW Sec 27	-	96
Section 35				
	35A01	SW NW Sec 35	124	4

- Not reported

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Those wells searched for during the second and third phases of the second level search would have been identified if they had existed at their reported locations. The magnetometer surveys performed in the vicinity of these reported well locations failed to produce any evidence of the presence of well casing. It is the opinion of PMO that these wells do not exist as reported. Therefore, if no additional information can be obtained from the Remedial Investigation geophysical surveys, these wells will not be included in any future efforts to close unused or abandoned wells on RMA. A list of these wells is included in Table 3.

There were 281 post-1942 wells identified for inclusion in Task 37. Of these 281 wells, 72 wells were included in the first level field search. Of the wells included in the first level field search, 26 wells were located, 20 wells were not searched for due to logistical constraints, and 26 wells were not located. The wells not searched for will be included in PMO's continuing efforts to close unused and abandoned wells on RMA.

3.0 WELL SAMPLING

Although it was originally intended that a portion of the wells included in Task 37 would be sampled prior to closure, PMO was of the opinion that Task 37 wells should not be sampled because of the potential for inducing migration of groundwater between aquifers. PMO and others were concerned about sampling wells of unknown construction, or generating water-quality data of questionable quality by sampling wells that are open to more than one formation. To alleviate these concerns, sampling criteria were established to determine which wells would be considered for sampling. These sampling criteria are listed in Figure 6. The first criterium was the extent to which the well construction details were known or could be ascertained during cleaning operations. A well for which construction details were not known was not considered for sampling. The second criterium was the proximity of the well to known contaminant plumes. Only wells that were within one half mile of a contaminant plume were considered for sampling. The third criterium was the aquifer penetrated by the well. Only wells that penetrated the lower Denver Formation or the Arapahoe Formation were considered for sampling. The final criterium was the location of a well with respect to associated wells. A well was considered for sampling only when it was in an area where no other water-quality data exist for the aquifer tapped by the well.

These criteria were developed to assure that sampling would provide accurate water-quality data for deep aquifers in those areas where little or no data already exist. None

Table 3. Task 37 Wells Assumed not to Exist as Reported.

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 04	04A12	NW NW Sec 04	-	-
Section 09	09A12	NW SW Sec 09	73	-
Section 25	25A01	NE NW Sec 25	79	6
	25A02	NE NW Sec 25	19/600	6
	25A03	NW NE Sec 25	170	-
Section 26	26A02	NE NW Sec 26	700	36
Section 30	30A02	SW SW Sec 30	610	36
Section 33	33A03	SE SE Sec 33	150	-
	33A07	SW NW Sec 33	-	-

- Not Reported

Figure 6. Water Sampling Criteria.

WELL NUMBER: _____

LOCATION: Twnshp _____ S Rng _____ W Section _____
Qtr _____ Qtr

WELL CONSTRUCTION: _____

Well construction details known	5
Well construction details unknown	0

ASSOCIATED CONTAMINANTS: _____

In plume or within one-half mile of plume	5
Beyond one-half mile from plume	0

AQUIFER: _____

Arapahoe or Denver	5
Alluvium	0

ASSOCIATED WELLS: _____

Not near wells into same aquifer	5
Near many wells into the same aquifer	0

TOTAL* (will be sampled if total = 20): _____

* Requests for specific wells to sample have been solicited from concerned parties and will be evaluated on a case by case basis.

of the wells located during the Task 37 field searches met the sampling criteria. All of the pre-1942 wells failed to meet the sampling criteria due to a lack of well construction information. The post-1942 wells failed to meet the sampling criteria because water-quality data already exist for the areas in which they are located. Thirteen wells were requested by Shell for sampling prior to closure (Table 4). Eight of these thirteen wells were located during the Task 37 field searches, however, none of these eight wells were closed under Task 37, and therefore, none were sampled.

4.0 WELL CLOSURE PROGRAM

Wells located during Task 37 were prioritized for closure in an order that was consistent with their first and second level search priorities and would optimize the efficiency of the closure program. Due to the varied construction of the wells included in Task 37, the wells were divided into four groups based on the procedures and equipment required for their closure, and a closure program was initiated that closed wells in the four groups concurrently. The four well groupings were designated as follows.

- Deep, drilled, pre-1942 wells.
- Shallow, drilled, pre-1942 wells.
- Drilled, post-1942, PVC monitoring wells.
- Shallow, hand-dug, pre-1942 wells.

A well closure log such as that illustrated in Figure 7 was completed for each of the wells closed under Task 37. Well closure logs for each of the wells closed under Task 37 are contained in Appendix I. Closure methods followed standardized procedures in use by water well contractors in accordance with USATHAMA Quality Assurance/Quality Control procedures. These methods are in compliance with State of Colorado standards for well sealing (Colorado State Board of Examiners of Water Well and Pump Installation Contractors, 1984). A list of the wells closed under Task 37 is provided in Table 5.

Well closure procedures for each of the four categories of wells were designed to accomplish the following tasks.

- Eliminate physical hazards.
- Maintain the hydrostatic head of each of the aquifers penetrated by the well.
- Prevent the intermingling of water from different aquifers or different zones within the same aquifer.
- Prevent groundwater contamination from surface or near-surface source.

Table 4. Task 37 Wells Requested for Sampling by Shell.

Section 02	02A05	SW NW Sec 02	Y	630	-
Section 03	03A07	NW NW Sec 03	Y	77	8
	03A08	NW SW Sec 03	Y	-	-
Section 23	23A06	NE NE Sec 23	N	480/418	6
Section 24	24A01	SE SE Sec 24	N	-	-
	24A02	NE SE Sec 24	Y	77/1000	8
	24A06	NW SW Sec 24	Y	450	-
Section 25	25A01	NE NW Sec 25	N	79	6
Section 27	27A06	SW NW Sec 27	Y	-	36
Section 33	33A07	SW NW Sec 33	N	-	-
	33A09	NW NW Sec 33	Y	96	48
Section 35	35A01	SW NW Sec 35	N	124	4
	35A03	NE NE Sec 35	Y	-	-

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Table 5. Wells Closed Under Task 37.

Well	Reported Diameter (inches)	Reported Depth (feet)	Closure Dates Initiated/Completed	Actual Diameter	Actual Depth (inches)(feet)	Type of Well
27A05	6	58	05-16-88/09-20-88	5/3	260	Deep pre-1942 well
33A01	30	56	05-24-88/05-31-88	4.5/4	54.5	Shallow pre-1942 well
26046	2	43.5	06-03-88/06-03-88	2	44.7	Post-1942 monitoring well
26044	2	54.2	05-31-88/ 06-01-88	2	57.9	Post-1942 monitoring well
26043	2	73.5	06-02-88/ 06-02-88	2	77	Post-1942 monitoring well
26A01	8	27	06-07-88/09-16-88	3	377	Deep pre-1942 well
23A04	6	460	06-06-88/07-06-88	4	277	Deep pre-1942 well
02A03	-	600	07-11-88/ 7-18-88	4	285	Deep pre-1942 well
09A04	6	75	70-11-88/07-13-88	5	74	Shallow pre-1942 well
09A18	6	72	07-16-88/07-21-88	6	75	Shallow pre-1942 well
04A10	6	72	07-26-88/07-28-88	5.25	72	Shallow pre-1942 well
04AGM-1	-	-	07-29-88/08-02-88	5	85	Shallow pre-1942 well
26A03	36	48	07-26-88/09-20-88	5/3	711	Deep pre-1942 well
09A13	-	-	08-04-88/08-12-88	3.9/3	62.5	Shallow pre-1942 well
04A08	-	60	08-15-88/08-18-88	12	41.2	Shallow pre-1942 well
09A07	-	77	08-16-88/08-18-88	5/4.9/3.5	77	Shallow pre-1942 well
02A01	-	30	08-21-88/08-23-88	3.375	57.5	Shallow pre-1942 well
03A04	-	50	08-24-88/08-26-88	6.375	32	Shallow pre-1942 well
23062	2	23	08-16-88/08-17-88	2	23	Post-1942 monitoring well
23163	2	57	08-16-88/08-16-88	2	57	Post-1942 monitoring well
27014	2	29	08-17-88/08-17-88	2	27	Post-1942 monitoring well
27021	2	20	08-17-88-08-17-88	2	18.5	Post-1942 monitoring well
27022	2	15	08-17-88/08-17-88	2	17	Post-1942 monitoring well
27023	2	42	08-17-88/08-17-88	2	44	Post-1942 monitoring well
35010	2	58	08-22-88/08-22-88	2	60	Post-1942 monitoring well
35019	2	92	08-18-88/08-19-88	2	95	Post-1942 monitoring well
35024	2	58	08-22-88/08-23-88	2	58	Post-1942 monitoring well
35049	2	70	08-24-88/08-25-88	2	71	Post-1942 monitoring well

Table 5. (continued)

Well	Reported		Closure Dates		Actual Diameter	Actual Depth		Type of Well
	Diameter (inches)	Depth (feet)	Initiated	Completed		(inches)	(feet)	
09A17	6	61	08-29-88	09-02-88	6	70	70	Shallow pre-1942 well
33A04	6	115	08-22-88	09-14-88	5.25/4.25	511	511	Deep pre-1942 well
33016	2	85	08-30-88	08-31-88	2	85	85	Post-1942 monitoring well
33013	2	126	08-31-88	09-02-88	2	126	126	Post-1942 monitoring well
24120	2	97	08-26-88	08-29-88	2	97	97	Post-1942 monitoring well
24144	2	60	08-29-88	08-30-88	2	63	63	Post-1942 monitoring well
23164	2	95	09-07-88	09-08-88	2	97	97	Post-1942 monitoring well
33012	2	124	09-06-88	-09-06-88	2	125	125	Post-1942 monitoring well
23170	2	113	09-09-88	09-12-88	2	115	115	Post-1942 monitoring well
09A08	36	44	08-12-88	08-15-88	32	44	44	Pre-1942 hand-dug well
23162	2	113	09-14-88	09-18-88	2	115	115	Post-1942 monitoring well

Figure 7. Task 37 Well Closure Log.

TASK 37 - WELL CLOSURE LOG

Well # _____ Reported Depth: _____
Observed Casing at Surface: _____ thick, _____ diameter
Location: _____ 1/4 of the _____ 1/4 of the sec
T _____, R, _____, _____ pm
State Planar Coordinates: N _____, E _____
Drilling/Well Closure Contractor: _____
Closure Dates: _____ to _____

WELL CLOSURE PROCEDURES/INFORMATION

Clean-Out

Equipment Used: _____

Depth of Clean-out Achieved: _____ ft.

Reason for discontinuing Clean-out at depth listed above:

- _____ Refusal/probable blockage
- _____ At probable original TD of well based on drilling information
- _____ Both of the above
- _____ Other, (explain): _____

Geophysical Logs Run _____ yes _____ no

Contractor: _____

Types of Logs Run: _____

Logging interval: _____ ft to _____ ft

Fig. 27. Cor. me

Approximate Construction Details of Well based on information obtained during clean-out and from geophysical logs.

Casing Type

• Plain

Perforated

To From

	Water	Loc.
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100		

Schematic Diagram

- Perforated
- Uncertain

To From

8

Casing Type

• Plain

Perforated

To From

Water	Loc.
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
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100	100

Schematic Diagram

- Perforated
- Uncertain

To From

8

Well Development (performed only at wells to be sampled prior to closure)

Contractor:

Date: _____ Method(s): _____

Casing Removed from Well

Plain	Perforated
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
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98	98
99	99
100	100

Size _____ & kind _____ from _____ to _____ ft

Size _____ & kind _____ from _____ to _____ ft

Size _____ & kind _____ from _____ to _____ ft

Size _____ & kind _____ from _____ to _____ ft

Amount & Location of Casing Left in Well

Amount _____ ft Interval: from _____ to _____ ft

Plain - Perforated - Uncertain (circle one) Size:

Method of Parting this Casing from that Removed from Well:

Perforations Imparted to Casing Left in Well

Method(s):

Interval: from _____ to _____ ft

Interval: from _____ to _____ ft

Plugging

Material: _____ Interval: from _____ to _____ ft

Remarks

Prepared by:

To properly close the wells, all materials that may have hindered the sealing operation, including the well casing and screen, were removed to the extent possible. Well casing, screen, and other debris removed from the wells was decontaminated and transported to building 787 for storage. If the casing could not be removed, it was perforated with explosives to allow grout to fill the annular space as well as the inside of the casing. Grout was introduced at the bottom of the well or at the interval to be sealed through a tremie pipe and placed progressively upward to the top of the well until it flowed undiluted from the well at the land surface.

The four types of wells as designated by the groupings above required different closure techniques. The specific techniques used to close each type of well are described in the following sections.

4.1 CLOSURE TECHNIQUES FOR DEEP PRE-1942 WELLS

The deep, drilled pre-1942 wells were designated as any pre-1942 well over 100 feet deep. Five of these wells were closed under Task 37 using a combination of air rotary and mud rotary drilling methods. Initially surface casing was set to contain the drilling fluids, and then the inside of the casing was washed out using a small diameter drill string. The diameter of these well casings commonly decreased with depth, and successively smaller drill strings were required to wash out the casing. Fill material washed out of these casings included dirt, rocks, wood, and metal. Occasionally an obstruction was encountered that would impede the advance of the drill string. When this occurred, fishing tools were used to extract the obstruction, or a special milling tool was fabricated to drill through the obstruction. If the obstruction could not be milled out, as was the case with Well 23A04, a larger milling tool was fabricated to mill out all of the casing. Cleaning operations continued until return cuttings and drilling speed indicated that bedrock had been reached. A number of these wells were found to be much deeper than had been reported (Table 5).

After these wells had been cleaned out to their total depth, geophysical logs were run to determine well construction information and the competency of the casing. Three prong caliper and casing collar locator logs were run on each of the cased holes. Copies of these logs are presented in Plates 20 through 24. The geophysical logs indicated that in some cases these wells were cased to total depth. In other cases, the wells were cased only through the unconsolidated deposits, and extended to total depth as open borehole.

The well casings were often deteriorated, and appeared to have been screened through several zones.

It was not possible to remove all of the casing from three of these wells (26A03, 27A05, 26A01). When casing was to be left in the hole, it was perforated using perforating guns and explosives according to standard oil industry practices. The casings were perforated at 10 foot intervals or less, and then cut at approximately 20 feet below the Denver Formation/alluvium contact so that the top section of casing could be removed. The perforation scheme for these wells are illustrated in plates 21 through 24.

The perforated section of the casing was grouted from the bottom up using a tremie pipe. The top section of casing was then overdrilled using washover pipe and removed prior to grouting the borehole to the surface.

4.2 CLOSURE TECHNIQUES FOR SHALLOW PRE-1942 WELLS

Twelve shallow pre-1942 wells were closed under Task 37. These wells were closed using truck mounted hollow stem auger equipment. Surface casing was set to contain drilling fluids, and the casings were washed out using a small-diameter drill string that would fit inside the casing. Material washed out or removed from these wells included dirt, rocks, pumps, wood, and construction debris. The cleaning operation continued until the reported total depth was reached. If an obstruction was encountered in the well, fishing tools were used to remove it. If the total depth of the well was uncertain, or if it did not match the recorded depth of the well, split-spoon samples were taken to determine if total depth had been reached.

After these wells had been cleaned out to total depth, the casing was removed. Large diameter, hollow stem augers were used to overdrill the casing, and the casing was removed from the borehole. If the casing could not be removed by pulling at the surface, a casing spear/grapple or overshot tool was used to remove the casing. In some cases, incompetent casing that could not be removed was augered into pieces prior to grouting.

Once the casing was removed, the borehole was grouted. The grout was placed inside the hollow stem augers through a tremie pipe. The tremie pipe and augers were raised as the borehole filled with grout. This process continued until the borehole was filled to the surface.

4.3 CLOSURE TECHNIQUES FOR POST-1942 MONITORING WELLS

Twenty-one post-1942 monitoring wells were closed under Task 37. Four wells that were not originally included in Task 37, 26043, 26044, 26046 and 33016 were closed at the request of PMO. Task 37 post-1942 wells included both alluvial and bedrock (Denver Formation) monitoring wells. All of the wells were cased with 2-inch diameter PVC. The bedrock wells were constructed with 8 inch diameter surface casing to prevent flow between the alluvium and the Denver Formation. Accurate well construction records existed for these wells, therefore cleaning the wells out to ascertain total depth was not necessary. Initially, all casing recovery was attempted by overdrilling with 4.5 inch diameter hollow stem augers. The alluvial wells were successfully closed using this technique, however, this method was changed in response to deviation problems that occurred when the augers penetrated below the surface casing of the bedrock wells. This problem was solved by using 3 inch diameter washover pipe to overdrill the 2 inch diameter PVC casing. The casing was then removed using a taper-tap tool. The 8 inch diameter surface casing was subsequently drilled out using 12 inch diameter hollow stem augers.

If the well was reported as penetrating both the alluvium and the upper Denver Formation, the borehole was grouted as the augers or washover pipe were removed from the borehole to ensure a competent seal across the aquifers. If the well was completed within the alluvium, the borehole was grouted after the augers were pulled, allowing the formation to collapse below the water table. In either case, the grout was placed through a tremie pipe starting at the bottom of the borehole and proceeding to land surface.

4.4 CLOSURE TECHNIQUES FOR PRE-1942 HAND-DUG WELLS

Only one pre-1942 hand-dug well, 09A08, was closed under Task 37. This well was closed at the request of PMO. A drill rig was used to hoist the debris out of the well. Once the debris was removed from the well, a visual inspection of the well was made, and several split spoon samples were taken to ascertain if the well had been drilled through the bottom. Once total depth was confirmed, the well was filled with pea gravel to within 10 feet of the land surface in accordance with State of Colorado regulations. The top ten feet of the casing, which in this instance was constructed of bricks, was then removed. The volume of cement required to fill the hole precluded the use of a drill rig and tremie pipe operation to grout this well. Therefore, a truck mounted cement mixer was used to fill the 10 feet of open hole with concrete.

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APPENDIX A

Status of Wells Included in Task 37

Wells Included in Task 37

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 02	02A01	SE SE Sec 02	-	4
	02A02	SE SW Sec 02	-	6
	02A03	NW SW Sec 02	600	-
	02A04	NW SW Sec 02	-	-
	02A05	SW NW Sec 02	630	-
Section 03	03A01	SE SE Sec 03	35	40
	03A02	SE SE Sec 03	44	6
	03A03	SE SE Sec 03	-	-
	03A04	NE SE Sec 03	-	-
	03A05	NW NE Sec 03	69	6
	03A06	NE NW Sec 03	67	6
	03A07	NW NW Sec 03	77	8
	03A08	NW SW Sec 03	-	-
	03A09	SW SW Sec 03	700	-
	03A10	SE SW Sec 03	59	18
	03A11	SW SE Sec 03	500	6
	03A12	SE SW Sec 03	-	48
	03A13	NW SE Sec 03	57	6
	03A14	SW SE Sec 03	58	-
	03A15	NE SW Sec 03	-	-
	03A16	NW SE Sec 03	68	6
	03A17	SW SE Sec 03	68	48
	03A18	SE SE Sec 03	-	-
	03A19	NE SE Sec 03	46	30
	03A20	NW SE Sec 03	-	-
	03A21	NE SE Sec 03	-	-
	03A22	SE SE Sec 03	-	-
	03A23	NE SW Sec 03	94	6
	03A24	Sec 03	43	8
	03AGM-1	SW SW Sec 03	-	-
Section 04	04A01	SW SW Sec 04	71	-
	04A02	SW SW Sec 04	-	-
	04A03	NW SE Sec 04	54	40
	04A04	NW SW Sec 04	57	48
	04A05	SE SW Sec 04	51	36
	04A06	SW NW Sec 04	-	-
	04A07	NE SW Sec 04	65	40
	04A08	NW SW Sec 04	60	-
	04A09	SE SW Sec 04	78	6
	04A10	SE SW Sec 04	72	6
	04A11	SE SW Sec 04	-	-
	04A12	NW NW Sec 04	-	-

NOTE: - Not Reported

Wells Included in Task 37 (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 04 (continued)	04A13	SW NE Sec 04	-	-
	04A14	SW NE Sec 04	-	-
	04AGM-1	SW SW Sec 04	-	-
	04AGM-2	SW SW Sec 04	-	-
Section 09	09A01	NW NE Sec 09	34	-
	09A02	NW NE Sec 09	900	-
	09A03	NW NE Sec 09	500	4
	09A04	NE NW Sec 09	75	6
	09A05	SW SW Sec 09	1000	30
	09A06	NW NW Sec 09	56	6
	09A07	NW NW Sec 09	77	-
	09A08	SE SW Sec 09	44	36
	09A09	SW NW Sec 09	55	40
	09A10	SW SW Sec 09	1000	-
	09A11	SE SW Sec 09	800	-
	09A12	NW SW Sec 09	73	-
	09A13	NW SW Sec 09	-	-
	09A14	SW NW Sec 09	52	36
	09A15	SE SW Sec 09	-	-
	09A16	NW NE Sec 09	76	6
	09A17	NW SW Sec 09	61	6
	09A18	NE NW Sec 09	72	6
	09A19	NW NW Sec 09	54	-
	09A20	SW NW Sec 09	58	6
Section 19	19A01	SW SW Sec 19	14	6
Section 22	22001	NE SE Sec 22	44	4
	22009	SE SW Sec 22	59	4
	22010	SE SW Sec 22	40	2.5
	22032	SE SW Sec 22	56	6
	22035	SE SW Sec 22	60	2
	22A01	SW SE Sec 22	500	6
	22A02	SE SE Sec 22	524	36
	22A03	SW NE Sec 22	500	6
Section 23	23001	NW NE Sec 23	16	4
	23003	SE SW Sec 23	57	4
	23005	NE NE Sec 23	22	4
	23006	SW SE Sec 23	50	4
	23017	NE NE Sec 23	22	2.5
	23018	NE NE Sec 23	24	2.5
	23019	NE NE Sec 23	23	2.5
	Well	Location	Reported	Reported

NOTE: - Not Reported

Wells Included in Task 37 (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 23 (continued)	23020	NE NE Sec 23	14	2
	23022	NE NE Sec 23	14	2
	23024	NE NE Sec 23	16	4
	23027	NE NE Sec 23	15	2
	23038	NE NW Sec 23	17	2
	23040	NE NW Sec 23	21	2
	23041	NE NW Sec 23	16	2
	23042	NW NE Sec 23	18	2
	23049	SW SE Sec 23	39	2
	23050	SW NE Sec 23	48	2
	23055	SW SE Sec 23	56	2
	23060	SE NW Sec 23	30	2
	23062	SE NW Sec 23	23	2
	23065	NW NW Sec 23	23	2
	23095	SW SE Sec 23	49	2
	23108	SW SW Sec 23	39	2
	23112	NE NE Sec 23	15	2
	23113	NE NE Sec 23	16	2
	23114	NE NE Sec 23	15	2
	23115	NE NE Sec 23	21	2
	23116	NE NE Sec 23	14	2
	23117	NE NE Sec 23	20	2
	23127	SW SW Sec 23	35	2
	23132	SE SW Sec 23	43	2
	23147	NW NE Sec 23	23	2
	23151	SW NE Sec 23	38	2
	23152	NE NE Sec 23	-	2
	23153	NE NE Sec 23	-	2
	23154	NE NE Sec 23	-	2
	23155	NE NE Sec 23	-	2
	23156	NE NE Sec 23	-	2
	23162	NE NE Sec 23	113	2
	23163	NW NE Sec 23	56	2
	23164	NW NE Sec 23	93	2
	23165	NW NE Sec 23	15	2
	23167	NW NE Sec 23	54	2
	23168	NW NE Sec 23	77	2
	23169	NW NE Sec 23	105	2
	23170	NE NE Sec 23	113	2
	23171	NE NE Sec 23	29	2
	23172	NE NE Sec 23	44	2
	23173	NW NE Sec 23	33	2
	23174	NW NE Sec 23	45	2
	23175	NW NE Sec 23	17	2
	23301	NE NE Sec 23	21	6

NOTE: - Not Reported

Wells Included in Task 37 (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 23 (continued)	23303	NE NE Sec 23	22	6
	23304	NE NE Sec 23	30	6
	23305	NE NE Sec 23	34	6
	23330	NW NE Sec 23	32	6
	23331	NW NE Sec 23	25	6
	23332	NW NE Sec 23	25	6
	23333	NW NE Sec 23	25	6
	23334	NW NE Sec 23	25	6
	23335	NE NE Sec 23	22	6
	23432	NW NE Sec 23	16	12
	23433	NW NE Sec 23	17	12
	23434	NW NE Sec 23	23	12
	23435	NW NE Sec 23	16	12
	23436	NW NE Sec 23	18	12
	23437	NW NE Sec 23	21	12
	23438	NW NE Sec 23	24	12
	23A01	SE SW Sec 23	63	-
	23A02	SE SW Sec 23	59	36
	23A03	NE SW Sec 23	-	48
	23A04	NW NW Sec 23	460	6
	23A05	NE NW Sec 23	520	-
	23A06	NE NE Sec 23	480/418	6
	23A07	SE NE Sec 23	34	48
	23A08	NW SW Sec 23	59	36
Section 24	24004	NW NE Sec 24	31	4
	24005	NE NW Sec 24	19	4
	24007	SW NW Sec 24	42	2.5
	24008	SW NW Sec 24	42	2.5
	24009	NW SW Sec 24	36	2.5
	24010	SW SW Sec 24	40	2.5
	24012	NW NW Sec 24	23	2.5
	24024	NW NW Sec 24	19	2
	24028	NE SW Sec 24	27	2
	24029	NE NW Sec 24	22	2
	24030	NW NE Sec 24	21	2
	24031	NW NE Sec 24	22	2
	24032	NE NE Sec 24	48	2
	24033	NE NW Sec 24	22	2
	24034	NE NW Sec 24	22	2
	24035	NE NW Sec 24	22	2
	24036	NE NW Sec 24	21	2
	24037	NE NW Sec 24	21	2
	24038	NE NW Sec 24	21	

NOTE: - Not Reported

Wells Included in Task 37 (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 24 (continued)	24039	NE NW Sec 24	19	2
	24040	NE NW Sec 24	25	2
	24043	NE SW Sec 24	36	5
	24045	NE SW Sec 24	32	2
	24046	NE SW Sec 24	30	2
	24048	NW SW Sec 24	33	2
	24050	NE SW Sec 24	49	2
	24051	NE SW Sec 24	32	2
	24052	NE SW Sec 24	32	2
	24054	SE NW Sec 24	37	2
	24055	SE NW Sec 24	35	2
	24059	NE NW Sec 24	21	2
	24060	NE NW Sec 24	21	2
	24061	NE NW Sec 24	19	2
	24064	NW SE Sec 24	20	2
	24065	NW SE Sec 24	30	2
	24066	NE NW Sec 24	18	2
	24067	NE NW Sec 24	22	2
	24068	NE NW Sec 24	12	2
	24084	SW SE Sec 24	40	2
	24088	SE SE Sec 24	33	2
	24091	SW SW Sec 24	-	2
	24096	SE NE Sec 24	22	2
	24116	SE NW Sec 24	32	2
	24119	NW NW Sec 24	-	2
	24120	NE NE Sec 24	97	2
	24131	NE NW Sec 24	55	2
	24132	NE NW Sec 24	69	2
	24133	NW NW Sec 24	52	2
	24134	NW NW Sec 24	80	2
	24137	NW NW Sec 24	102	2
	24138	NW NW Sec 24	46	2
	24139	NW NW Sec 24	89	2
	24140	NE NW Sec 24	32	2
	24141	NE NW Sec 24	67	2
	24142	NE NW Sec 24	56	2
	24143	NE NW Sec 24	83	2
	24144	NW NE Sec 24	60	2
	24145	NW NE Sec 24	42	2
	24146	NW NE Sec 24	65	2
	24147	NW NE Sec 24	92	2
	24148	NW NE Sec 24	20	2
	24153	NW NW Sec 24	25	6
	24154	NW NE Sec 24	67	4

NOTE: - Not Reported

Wells Included in Task 37 (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 24 (continued)	24155	NW NE Sec 24	61	2
	24156	NW NE Sec 24	59	2
	24157	NW NE Sec 24	27	2
	24165	NE NW Sec 24	27	4
	24170	NE NW Sec 24	16	4
	24183	NW NE Sec 24	23	4
	24188	NW NE Sec 24	21	4
	24306	NW NW Sec 24	32	6
	24307	NW NW Sec 24	30	6
	24308	NW NW Sec 24	28	6
	24309	NW NW Sec 24	29	6
	24310	NW NW Sec 24	31	6
	24311	NW NW Sec 24	27	6
	24312	NW NW Sec 24	28	6
	24313	NW NW Sec 24	29	6
	24314	NE NW Sec 24	30	6
	24315	NE NW Sec 24	28	6
	24316	NE NW Sec 24	25	6
	24317	NE NW Sec 24	23	6
	24318	NE NW Sec 24	26	6
	24319	NE NW Sec 24	26	6
	24320	NE NW Sec 24	27	6
	24321	NE NW Sec 24	30	6
	24322	NW NE Sec 24	24	6
	24323	NW NE Sec 24	29	6
	24324	NW NE Sec 24	26	6
	24325	NW NE Sec 24	25	6
	24326	NW NE Sec 24	28	6
	24327	NW NE Sec 24	28	6
	24328	NW NE Sec 24	26	6
	24329	NW NE Sec 24	32	6
	24413	NW NW Sec 24	23	12
	24414	NW NW Sec 24	17	12
	24415	NW NW Sec 24	15	12
	24416	NW NW Sec 24	21	12
	24417	NW NW Sec 24	23	12
	24418	NW NW Sec 24	21	12
	24419	NE NW Sec 24	22	12
	24420	NE NW Sec 24	22	12
	24421	NE NW Sec 24	22	12
	24422	NE NW Sec 24	24	12
	24423	NE NW Sec 24	24	12
	24424	NE NW Sec 24	27	12
	24425	NW NE Sec 24	33	12

NOTE: - Not Reported

Wells Included in Task 37 (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 24				
(continued)	24426	NW NE Sec 24	33	12
	24427	NW NE Sec 24	33	12
	24428	NW NE Sec 24	32	12
	24429	NW NE Sec 24	31	12
	24430	NW NE Sec 24	34	12
	24431	NW NE Sec 24	37	12
	24A01	SE SE Sec 24	-	-
	24A02	NE SE Sec 24	77/1000	8
	24A03	NW NE Sec 24	44	6
	24A04	NE SW Sec 24	34	24
	24A05	NE SW Sec 24	20	60
	24A06	NW SW Sec 24	450	-
Section 25				
	25001	SE SE Sec 25	30	4
	25002	SW SW Sec 25	14	2
	25005	NW SW Sec 25	27	2
	25006	NW SW Sec 25	74	2
	25027	SW NW Sec 25	46	2
	25028	SW NW Sec 25	59	2
	25033	SE NW Sec 25	93	2
	25A01	NE NW Sec 25	79	6
	25A02	NE NW Sec 25	19/600	6
	25A03	NW NE Sec 25	170	-
Section 26				
	26006	SE SW Sec 26	38	4
	26007	SW NE Sec 26	59	4
	26010	NW SE Sec 26	47	4
	26012	NW SE Sec 26	35	4
	26015	NE NW Sec 26	51	2
	26017	NW NW Sec 26	47	2
	26020	NW NW Sec 26	43	2
	26031	NW SE Sec 26	76	2
	26032	NW SE Sec 26	37	2
	26033	SW NE Sec 26	62	2
	26034	SW NE Sec 26	72	2
	26035	SW NE Sec 26	58	2
	26036	SW NE Sec 26	55	2
	26037	NW NE Sec 26	67	2
	26038	NW NE Sec 26	65	2
	26039	NW NE Sec 26	62	2
	26042	NE NW Sec 26	76	2
	26049	SW NW Sec 26	36	2
	26098	SE SE Sec 26	14	2

NOTE: - Not Reported

Wells Included in Task 37 (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 26 (continued)	26137	NW NW Sec 26	222	2
	26A01	SW NW Sec 26	27	8
	26A02	NE NW Sec 26	700	36
	26A03	NW NE Sec 26	48	36
Section 27	27001	NW NW Sec 27	53	4
	27008	NW NW Sec 27	44	2
	27014	NE NE Sec 27	29	2
	27016	NE NE Sec 27	25	2
	27020	SE NE Sec 27	27	2
	27021	SE NE Sec 27	17	2
	27022	SE NE Sec 27	15	2
	27023	NE SE Sec 27	42	2
	27024	NE SE Sec 27	37	2
	27026	NE SE Sec 27	33	2
	27035	SE SW Sec 27	68	2
	27036	SE SW Sec 27	62	2
	27067	NE NW Sec 27	-	2
	27A01	NE NW Sec 27	620	96
	27A02	NW NW Sec 27	-	96
	27A03	NW NW Sec 27	45	-
	27A04	NW NW Sec 27	23	-
	27A05	SE SE Sec 27	58	6
	27A06	SW NW Sec 27	-	36
Section 28	28010	SW NE Sec 28	48	2
	28016	NW SE Sec 28	48	2
	28017	NW SE Sec 28	44	2
	28019	NE SW Sec 28	49	2
	28021	SE SW Sec 28	45	2
	28A01	SE NE Sec 28	48	4
	28A02	NE SE Sec 28	47	48
Section 30	30001	NW SW Sec 30	41	4
	30002	NW NW Sec 30	47	4
	30A01	NW SW Sec 30	45	6
	30A02	SW SW Sec 30	610	36
	30A03	SW SW Sec 30	-	-
	30A06	NW SW Sec 30	-	-
Section 31	31001	NE NW Sec 31	27	4
	31004	SW SW Sec 31	89	2
	31A01	SW SW Sec 31	25	36

NOTE: - Not Reported

Wells Included in Task 37 (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 31 (continued)	31A02	NW NW Sec 31	26	6
	31A03	NW NW Sec 31	-	-
	31A04	NW NW Sec 31	40	12
	31A05	SE SE Sec 31	45	48
	31A06	SE SE Sec 31	49	30
	31A07	SE SE Sec 31	50	-
	31A08	SW SE Sec 31	190	6
	31A09	NW NW Sec 31	-	-
Section 33	33003	NE NW Sec 33	58	2
	33004	NE NW Sec 33	53	2
	33005	NE NW Sec 33	48	2
	33006	NE NW Sec 33	54	2
	33007	NE NW Sec 33	53	2
	33008	NE NW Sec 33	56	2
	33009	NE NW Sec 33	59	2
	33010	NE NW Sec 33	58	2
	33011	NE NW Sec 33	78	2
	33012	NE NW Sec 33	124	2
	33013	NE NW Sec 33	126	2
	33A01	NE NW Sec 33	56	30
	33A02	NE NW Sec 33	-	-
	33A03	SE SE Sec 33	150	-
	33A04	SW SE Sec 33	115	6
	33A05	SE SW Sec 33	60	30
	33A06	SE SW Sec 33	80	3
	33A07	SW NW Sec 33	-	-
	33A08	SW NW Sec 33	50	7
	33A09	NW NW Sec 33	96	48
	33A10	SW NW Sec 33	57	36
	33A11	SW NW Sec 33	-	-
Section 34	34001	NE NE Sec 34	23	2
	34A01	SW SW Sec 34	-	30
Section 35	35001	SE NE Sec 35	31	4
	35004	NW NW Sec 35	27	4
	35010	NW NE Sec 35	58	2
	35019	NW NE Sec 35	92	2
	35024	NE SE Sec 35	58	2
	35042	SW NW Sec 35	37	2
	35043	SE NW Sec 35	35	2
	35044	NW NE Sec 35	31	2

NOTE: - Not Reported

Wells Included in Task 37 (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 35				
(continued)	35045	SE NE Sec 35	24	2
	35046	NE NE Sec 35	24	2
	35049	SE NW Sec 35	70	2
	35A01	SW NW Sec 35	124	4
	35A02	NW NW Sec 35	35	36
	35A03	NE NE Sec 35	-	-
	35A04	NE NE Sec 35	650	6
Section 36				
	36002	NW NW Sec 36	38	2
	36012	NW NW Sec 36	27	2
	36037	NW SW Sec 36	51	2
	36038	NW SW Sec 36	52	2
	36039	NW SW Sec 36	61	2
	36040	NW SW Sec 36	24	2
	36041	NW SW Sec 36	29	2
	36042	NW SW Sec 36	31	2
	36044	SW SW Sec 36	68	2
	36045	SW SW Sec 36	54	2
	36046	SW SW Sec 36	51	2
	36049	SW SW Sec 36	19	2
	36053	SW SW Sec 36	17	2
	36058	SW SW Sec 36	16	2
	36059	SW SW Sec 36	70	2
	36064	NW SE Sec 36	18	2
	36070	NE SW Sec 36	28	2
	36071	NE SW Sec 36	27	2
	36082	SE NW Sec 36	22	2
	36101	SW NW Sec 36	24	2
	36102	SW NW Sec 36	34	2
	36106	NW NW Sec 36	25	2
	36A01	SW SE Sec 36	-	-
	36A02	NE NE Sec 36	-	-

NOTE: - Not Reported

Wells Included in the Task 37 First Level Field Search

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 02				
	02A01	SE SE Sec 02	-	4
	02A02	SE SW Sec 02	-	6
	02A03	NW SW Sec 02	600	-
	02A04	NW SW Sec 02	-	-
	02A05	SW NW Sec 02	630	-
Section 03				
	03A03	SE SE Sec 03	-	-
	03A04	NE SE Sec 03	-	-
	03A07	NW NW Sec 03	77	8
	03A08	NW SW Sec 03	-	-
	03A09	SW SW Sec 03	700	-
	03A10	SE SW Sec 03	59	18
	03A11	SW SE Sec 03	500	6
	03A12	SE SW Sec 03	-	48
	03A14	SW SE Sec 03	58	-
	03A15	NE SW Sec 03	-	-
	03A17	SW SE Sec 03	68	48
	03A18	SE SE Sec 03	-	-
	03A21	NE SE Sec 03	-	-
	03A22	SE SE Sec 03	-	-
	03A23	NE SW Sec 03	94	6
Section 04				
	04A01	SW SW Sec 04	71	-
	04A02	SW SW Sec 04	-	-
	04A03	NW SE Sec 04	54	40
	04A04	NW SW Sec 04	57	48
	04A06	SW NW Sec 04	-	-
	04A08	NW SW Sec 04	60	-
	04A09	SE SW Sec 04	78	6
	04A10	SE SW Sec 04	72	6
	04A11	SE SW Sec 04	-	-
	04A12	NW NW Sec 04	-	-
	04A13	SW NE Sec 04	-	-
	04A14	SW NE Sec 04	-	-
Section 09				
	09A02	NW NE Sec 09	900	-
	09A03	NW NE Sec 09	500	4
	09A04	NE NW Sec 09	75	6
	09A05	SW SW Sec 09	1000	30
	09A06	NW NW Sec 09	56	6

NOTE: - Not Reported

Wells Included in the Task 37 First Level Field Search (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 09 (continued)	09A07	NW NW Sec 09	77	-
	09A08	SE SW Sec 09	44	36
	09A09	SW NW Sec 09	55	40
	09A10	SW SW Sec 09	1000	-
	09A11	SE SW Sec 09	800	-
	09A12	NW SW Sec 09	73	-
	09A13	NW SW Sec 09	-	-
	09A14	SW NW Sec 09	52	36
	09A15	SE SW Sec 09	-	-
	09A16	NW NE Sec 09	76	6
	09A17	NW SW Sec 09	61	6
	09A18	NE NW Sec 09	72	6
	09A19	NW NW Sec 09	54	-
	09A20	SW NW Sec 09	58	6
Section 19	19A01	SW SW Sec 19	14	6
Section 22	22A01	SW SE Sec 22	500	6
	22A02	SE SE Sec 22	524	36
	22A03	SW NE Sec 22	500	6
Section 23	23062	SE NW Sec 23	23	2
	23162	NE NE Sec 23	113	2
	23163	NW NE Sec 23	56	2
	23164	NW NE Sec 23	93	2
	23167	NW NE Sec 23	54	2
	23168	NW NE Sec 23	77	2
	23169	NW NE Sec 23	105	2
	23170	NE NE Sec 23	113	2
	23171	NE NE Sec 23	29	2
	23172	NE NE Sec 23	44	2
	23173	NW NE Sec 23	33	2
	23174	NW NE Sec 23	45	2
	23A01	SE SW Sec 23	63	-
	23A02	SE SW Sec 23	59	36
	23A03	NE SW Sec 23	-	48
	23A04	NW NW Sec 23	460	6
	23A05	NE NW Sec 23	520	-
	23A06	NE NE Sec 23	480/418	6
	23A07	SE NE Sec 23	34	48
	23A08	NW SW Sec 23	59	36

NOTE: - Not Reported

Wells Included in the Task 37 First Level Field Search (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 24	24032	NE NE Sec 24	48	2
	24119	NW NW Sec 24	-	2
	24120	NE NE Sec 24	97	2
	24131	NE NW Sec 24	55	2
	24132	NE NW Sec 24	69	2
	24133	NW NW Sec 24	52	2
	24134	NW NW Sec 24	80	2
	24137	NW NW Sec 24	102	2
	24138	NW NW Sec 24	46	2
	24139	NW NW Sec 24	89	2
	24140	NE NW Sec 24	32	2
	24141	NE NW Sec 24	67	2
	24142	NE NW Sec 24	56	2
	24143	NE NW Sec 24	83	2
	24144	NW NE Sec 24	60	2
	24145	NW NE Sec 24	42	2
	24146	NW NE Sec 24	65	2
	24147	NW NE Sec 24	92	2
	24154	NW NE Sec 24	67	4
	24155	NW NE Sec 24	61	2
	24156	NW NE Sec 24	59	2
	24157	NW NE Sec 24	27	2
	24A01	SE SE Sec 24	-	-
	24A02	NE SE Sec 24	77/1000	8
	24A03	NW NE Sec 24	44	6
	24A04	NE SW Sec 24	34	24
	24A05	NE SW Sec 24	20	60
	24A06	NW SW Sec 24	450	-
Section 25	25006	NW SW Sec 25	74	2
	25028	SW NW Sec 25	59	2
	25033	SE NW Sec 25	93	2
	25A01	NE NW Sec 25	79	6
	25A02	NE NW Sec 25	19/600	6
	25A03	NW NE Sec 25	170	-
Section 26	26031	NW SE Sec 26	76	2
	26032	NW SE Sec 26	37	2
	26033	SW NE Sec 26	62	2
	26034	SW NE Sec 26	72	2
	26035	SW NE Sec 26	58	2

NOTE: - Not Reported

Wells Included in the Task 37 First Level Field Search (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 26				
(continued)	26037	NW NE Sec 26	67	2
	26038	NW NE Sec 26	65	2
	26042	NE NW Sec 26	76	2
	26137	NW NW Sec 26	222	2
	26A01	SW NW Sec 26	27	8
	26A02	NE NW Sec 26	700	36
	26A03	NW NE Sec 26	48	36
Section 27				
	27014	NE NE Sec 27	29	2
	27016	NE NE Sec 27	25	2
	27021	SE NE Sec 27	17	2
	27022	SE NE Sec 27	15	2
	27023	NE SE Sec 27	42	2
	27024	NE SE Sec 27	37	2
	27026	NE SE Sec 27	33	2
	27035	SE SW Sec 27	68	2
	27036	SE SW Sec 27	62	2
	27A01	NE NW Sec 27	620	96
	27A02	NW NW Sec 27	-	96
	27A03	NW NW Sec 27	45	-
	27A04	NW NW Sec 27	23	-
	27A05	SE SE Sec 27	58	6
	27A06	SW NW Sec 27	-	36
Section 28				
	28A01	SE NE Sec 28	48	4
	28A02	NE SE Sec 28	47	48
Section 30				
	30A01	NW SW Sec 30	45	6
	30A02	SW SW Sec 30	610	36
	30A03	SW SW Sec 30	-	-
	30A06	NW SW Sec 30	-	-
Section 31				
	31004	SW SW Sec 31	89	2
	31A01	SW SW Sec 31	25	36
	31A02	NW NW Sec 31	26	6
	31A03	NW NW Sec 31	-	-
	31A04	NW NW Sec 31	40	12
	31A05	SE SE Sec 31	45	48
	31A06	SE SE Sec 31	49	30
	31A07	SE SE Sec 31	50	-
	31A08	SW SE Sec 31	190	6
	31A09	NW NW Sec 31	-	-

NOTE: - Not Reported

Wells Included in the Task 37 First Level Field Search (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 33				
	33012	NE NW Sec 33	124	2
	33013	NE NW Sec 33	126	2
	33A01	NE NW Sec 33	56	30
	33A02	NE NW Sec 33	-	-
	33A03	SE SE Sec 33	150	-
	33A04	SW SE Sec 33	115	6
	33A05	SE SW Sec 33	60	30
	33A06	SE SW Sec 33	80	3
	33A07	SW NW Sec 33	-	-
	33A08	SW NW Sec 33	50	7
	33A09	NW NW Sec 33	96	48
	33A10	SW NW Sec 33	57	36
	33A11	SW NW Sec 33	-	-
Section 34				
	34A01	SW SW Sec 34	-	30
Section 35				
	35010	NW NE Sec 35	58	2
	35019	NW NE Sec 35	92	2
	35024	NE SE Sec 35	58	2
	35049	SE NW Sec 35	70	2
	35A01	SW NW Sec 35	124	4
	35A02	NW NW Sec 35	35	36
	35A03	NE NE Sec 35	-	-
	35A04	NE NE Sec 35	650	6
Section: 36				
	36002	NW NW Sec 36	38	2
	36012	NW NW Sec 36	27	2
	36037	NW SW Sec 36	51	2
	36038	NW SW Sec 36	58	2
	36039	NW SW Sec 36	61	2
	36044	SW SW Sec 36	68	2
	36045	SW SW Sec 36	54	2
	36046	SW SW Sec 36	51	2
	36064	NW SE Sec 36	18	2
	36071	NE SW Sec 36	27	2
	36A01	SW SE Sec 36	-	-
	36A02	NE NE Sec 36	-	-

NOTE: - Not Reported

Wells Included in the Task 37 Second Level Field Search

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 02				
	02A02	SE SW Sec 02	-	6
	02A03	NW SW Sec 02	600	-
Section 04				
	04A11	SE SW Sec 04	-	-
	04A12	NW NW Sec 04	-	-
	04A13	SW NE Sec 04	-	-
Section 09				
	09A02	NW NE Sec 09	900	-
	09A12	NW SW Sec 09	73	-
Section 23				
	23A04	NW NW Sec 23	460	6
	23A06	NE NE Sec 23	480/418	6
Section 24				
	24A02	NE SE Sec 24	77/1000	8
	24A06	NW SW Sec 24	450	-
Section 25				
	25A01	NE NW Sec 25	79	6
	25A02	NE NW Sec 25	19/600	6
	25A03	NW NE Sec 25	170	-
Section 26				
	26A01	SW NW Sec 26	27	8
	26A02	NE NW Sec 26	700	36
	26A03	NW NE Sec 26	48	36
Section 30				
	30A02	SW SW Sec 30	610	36
Section 31				
	31A08	SW SE Sec 31	190	6
	31A09	NW NW Sec 31	-	-
Section 33				
	33A03	SE SE Sec 33	150	-
	33A07	SW NW Sec 33	-	-
Section 36				
	36A01	SW SE Sec 36	-	-

NOTE: - Not Reported

Wells Located during the Task 37 Field Searches

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 02	02A01	SE SE Sec 02	-	4
	02A03	NW SW Sec 02	600	-
	02A05	SW NW Sec 02	630	-
Section 03	03A03	SE SE Sec 03	-	-
	03A04	NE SE Sec 03	-	-
	03A07	NW NW Sec 03	77	8
	03A08	NW SW Sec 03	-	-
	03A09	SW SW Sec 03	700	-
	03AGM-1	SW SW Sec 03	-	-
Section 04	04A03	NW SE Sec 04	54	40
	04A04	NW SW Sec 04	57	48
	04A06	SW NW Sec 04	-	-
	04A08	NW SW Sec 04	60	-
	04A10	SE SW Sec 04	72	6
	04AGM-1	SW SW Sec 04	-	-
	04AGM-2	SW SW Sec 04	-	-
Section 09	09A02	NW NE Sec 09	900	-
	09A03	NW NE Sec 09	500	4
	09A04	NE NW Sec 09	75	6
	09A07	NW NW Sec 09	77	-
	09A08	SE SW Sec 09	44	36
	09A09	SW NW Sec 09	55	40
	09A13	NW SW Sec 09	-	-
	09A14	SW NW Sec 09	52	36
	09A17	NW SW Sec 09	61	6
	09A18	NE NW Sec 09	72	6
	09A20	SW NW Sec 09	58	6
Section 22	22A02	SE SE Sec 22	524	36
Section 23	23062	SE NW Sec 23	23	2
	23162	NE NE Sec 23	113	2
	23163	NW NE Sec 23	56	2
	23164	NW NE Sec 23	93	2
	23170	NE NE Sec 23	113	2
	23A01	SE SW Sec 23	63	-
	23A02	SE SW Sec 23	59	36
	23A04	NW NW Sec 23	460	6
	23A08	NW SW Sec 23	59	-

NOTE: - Not Reported

Wells Located during the Task 37 Field Searches (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 24	24120	NE NE Sec 24	97	2
	24137	NW NW Sec 24	102	2
	24144	NW NE Sec 24	60	2
	24A02	NE SE Sec 24	77/1000	8
	24A03	NW NE Sec 24	44	6
	24A05	NE SW Sec 24	20	60
	24A06	NW SW Sec 24	450	-
Section 25	25006	NW SW Sec 25	74	2
	25028	SW NW Sec 25	59	2
Section 26	26A01	SW NW Sec 26	27	8
	26A03	NW NE Sec 26	48	36
Section 27	27014	NE NE Sec 27	29	2
	27016	NE NE Sec 27	25	2
	27021	SE NE Sec 27	17	2
	27022	SE NE Sec 27	15	2
	27023	NE SE Sec 27	42	2
	27024	NE SE Sec 27	37	2
	27026	NE SE Sec 27	33	2
	27035	SE SW Sec 27	68	2
	27036	SE SW Sec 27	62	2
	27A05	SE SE Sec 27	58	6
	27A06	SW NW Sec 27	-	36
Section 30	30A01	NW SW Sec 30	45	6
	30A03	SW SW Sec 30	-	-
Section 31	31004	SW SW Sec 31	89	2
	31A02	NW NW Sec 31	26	6
	31A04	NW NW Sec 31	40	12
	31A08	SW SE Sec 31	190	6
Section 33	33012	NE NW Sec 33	124	2
	33013	NE NW Sec 33	126	2
	33A01	NE NW Sec 33	56	30
	33A02	NE NW Sec 33	-	-
	33A04	SW SE Sec 33	115	6
	33A06	SE SW Sec 33	80	3
	33A08	SW NW Sec 33	50	7
	33A09	NW NW Sec 33	96	48
	33A10	SW NW Sec 33	57	36
	33A11	SW NW Sec 33	-	-

NOTE: - Not Reported

Wells Located during the Task 37 Field Searches (continued)

	Well	Location	Reported Depth (ft)	Reported Diameter (in)
Section 34	34A01	SW SW Sec 34	-	30
Section 35	35010	NW NE Sec 35	58	2
	35019	NW NE Sec 35	92	2
	35024	NE SE Sec 35	58	2
	35049	SE NW Sec 35	70	2
	35A02	NW NW Sec 35	35	36
	35A03	NE NE Sec 35	-	-
	35A04	NE NE Sec 35	650	6

NOTE: - Not Reported

APPENDIX B

Data of Wells on RMA Database

LOG NO.
08/26/88

1946 FILE DOCUMENT "DATA OF WELLS ON RMA" DATABASE

WELL	TRACT	LOCATION	REPORTED DEPTH (ft)	DEPTH TO WATER	REPORTED DIAMETER (in)	REPORTED CASING TYPE	RECORD OF PUMP	HISTORICAL NOTE
** Section 02								
02A01	B68	SE SE			4			plug
02A02	B65	SE SW			6			capped-no data
02A03	B63	NW SW						filled
02A04	B63	NW SW						filled
02A05	B12	SW NW	630	170				filled
								bldg 373 *, req by shell
** Section 03								
03A01	B62	SE SE	35	29	40	concrete		filled
03A02	B61	SE SE	44	26	6			water, no data
03A03	B60	SE SE					hand	
03A04	B55	NE SE						
03A05	B12	NW NE	69	63	6			bldg 644, req by shell
03A06	B4	NE NW	67	65	6			filled *
03A07	B6	NW NW	77	62	8			4' brick wall
03A08	B37	NW SW						plugged *
03A09	B42	SW SW	700					
03A10	B43	SE SW	59	54	18	tile		
03A11	B44	SW SE	500		6			
03A12	B56	SE SW		47	48		hand & pipe	
03A13	B51	NW SE	57	56	6			
03A14	B58	SW SE	58					
03A15	B40	NE SW		64	6		R5038A motor	30 gal tank, school 181 *
03A16	B38	NW SE	68	45	48	concrete	hand	concrete cover, no data
03A17	B52	SW SE	68					6'x6'x6' concrete
03A18	B59	SE SE				concrete	hand	covered, no data
03A19	B54	NE SE	46	34	30		hand	covered, no data
03A20	B52A	NW SE						unable to locate
03A21	B53	NE SE						
03A22	B62	SE SE						
03A23	B39	NE SW	94	65	6			
03A24	B52		43	42	8			
** Section 04								
04A01	B33	SW SW	71					dry
04A02	B31	SW SW						filled
04A03	B16	NW SE	54	47	40		hand	
04A04	B21	NW SW	57		48	concrete		dry
04A05	B34	SE SW	51		36	concrete		dry
04A06	B13	SW NW						filled
04A07	B17	NE SW	65	60	40	concrete		filled *
04A08	B14	NW SW	60					
04A09	B33A	SE SW	78	60	6			filled
04A10	B35	SE SW	72	46	6			derby gate
04A11	B36	SE SW						filled
04A12	B1	NW NW						unable to locate
04A13	B2	SW NE						
04A14	B1	SW NE						

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1946 FILE DOCUMENT "DATA OF WELLS ON RNA" DATABASE

WELL	TRACT	LOCATION	REPORTED DEPTH (ft)	DEPTH TO WATER	REPORTED DIAMETER (in)	REPORTED CASING TYPE	RECORD OF PUMP	HISTORICAL NOTE
** Section 09								
09A01	B85	NW NE	34					dry
09A02	B85	NW NE						filled
09A03	B85	NW NE	500	61	4			dropped 103' no water *
09A04	B71	NE NW	75		6			brick walled, cased below
09A05	B124	SW SW	1000	51	30	brick&-		dry, covered w/concrete hc
09A06	B67	NW NW	56		6			
09A07	B69	NW NW	77					
09A08	B140	SE SW	44	41	36	brick		bldg 614
09A09	B13	SW NW	55	49	40	concrete		filled *
09A10	B124	SW SW	1000					filled *
09A11	B142	SE SW	800					filled
09A12	B122	NW SW	73					filled
09A13	B122	NW SW						filled
09A14	B79	SW NW	52	46	36	concrete		
09A15	B142	SE SW						
09A16	B85	NW NE	76	73	6			
09A17	B123	NW SW	61	53	6			
09A18	B73	NE NW	72	59	6			
09A19	B76	NW NW	54					dry
09A20	B81	SW NW	58	49	6			no marker, no cover, no nu
** Section 19								
19A01	D11	SW SW	14		6			dry
** Section 22								
22A01	A49	SW SE	500	55	6			*
22A02	A49	SE SE	524	32	36	concrete		*
22A03	A1	SW NE	500	60	6			
** Section 23								
23A01	A54	SE SW	63	51		pit & cased		pit, cased below
23A02	A54	SE SW	59	51	36	concrete		
23A03	A3	NE SW		47	48	concrete		filled *
23A04	A2	NW NW	460				windmill w/pump	covered, no data *
23A05	A3	NE NW	520	54	6			req by shell *
23A06	A4	NE NE	480	27	48	concrete		
23A07	A4	SE NE	34	51	36	concrete		
23A08	A54	NW SW	59					
** Section 24								
24A01	D10	SE SE					hand	no data, req by shell
24A02	D9	NE SE	77	14	8			req by shell
24A03	D1	NW NE	44	37	6			
24A04	D1	NE SW	34	24	24	concrete		
24A05	D1	NE SW	20	14	60	concrete	15hp allis chalmers	8" pipe, req shell
24A06	D1	NW SW	450					

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1946 FILE DOCUMENT "DATA OF WELLS ON RMA" DATABASE

WELL	TRACT	LOCATION	REPORTED DEPTH (ft)	DEPTH TO WATER	REPORTED DIAMETER (in)	REPORTED CASING TYPE	RECORD OF PUMP	HISTORICAL NOTE
** Section 25								
25A01	D10	NE NW	79	69	6			req by shell
25A02	D10	NE NW	19		6			dry
25A03	D10	NW NE						filled
** Section 26								
26A01	A87	SW NW	27		8			dry
26A02	A59	NE NW	700		36	walled		dry *
26A03	A59	NW NE	48		36	walled		dry
** Section 27								
27A01	A58	NE NW	620		96	concrete		conc frame, well covered n
27A02	A55B	NW NW			96	concrete		data "
27A03	A55	NW NW	45					conc frame, well covered n
27A04	A55C	NW NW	23					data
27A05	A86	SE SE	58					filled *
27A06	A573	SW NW		52	6			dry
					36			dry, drilled below pit, re
								shell
** Section 28								
28A01	A56A	SE NE	48	46	4			
28A02	A84	NE SE	47	37	48	concrete		
** Section 30								
30A01	D20	NW SW	45	12	6			
30A02	D20	SW SW			36	galv		water at top of well w/flo
30A03	D21	SW SW						filled
30A06	D20	NW SW						plugged at 8', dry
** Section 31								
31A01	D30	SW SW	25	22	36	concrete		
31A02	D26	NW NW	26	23.5	6			dry
31A03	D26	NW NW						
31A04	D25	NW NW	40	21	12			
31A05	D28	SE SE	45	21	48	steel		test on this well, concret
31A06	D28	SE SE	49	19	30	concrete		culvert
31A07	D28	SE SE	50					filled *
31A08	D28	SW SE	190		6			plug at 9' "
31A09	D25	NW NW						filled
** Section 33								
33A01	A74	NE NW	56	41	30	concrete		filled
33A02	A74	NE NW						filled
33A03	A93	SE SE						house #612
33A04	A93	SW SE	115	110	6			
33A05	A88	SE SW	60		30	brick		dry

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1946 FILE DOCUMENT "DATA OF WELLS ON RMA" DATABASE

WELL	TRACT	LOCATION	REPORTED DEPTH (ft)	DEPTH TO WATER	REPORTED DIAMETER (in)	REPORTED CASING TYPE	RECORD OF PUMP	HISTORICAL NOTE
33A06	A88	SE SW	80		3			21' to plug *
33A07	A79	SW NW						unable to locate, req by *
33A08	A79D	SW NW	50	42	7			
33A09	A76	NW NW	96	70	48	concrete		req by shell
33A10	A75	SW NW	57	44	36	concrete		plug
33A11	A75	SW NW						
** Section 34								
34A01	A89	SW 3W			30	brick		dry, shell req mistake?
** Section 35								
35A01	A91	SW NW	124	87	4			req by shell
35A02	A90	NW NW	35		36	concrete		dry
35A03	A92	NE NE						dry, req by shell
35A04	A92	NE NE	650	49	6			#831 idlewile *
** Section 36								
36A01	D23	SW SE						filled
36A02	D24	NE NE						filled

APPENDIX C

Real Estate Appraisals Database

Task 37
09/23/88

RMA HISTORY--REAL ESTATE APPRAISALS DATABASE

WELL	TRACT	REPORTED DEPTH (ft)	REPORTED DIAMETER (in)	REPORTED CASING TYPE	REPORTED VENDOR	REPORTED PUMP	REPORTED PURPOSE	REPORTED TANK	HISTORICAL NOTES
** SECTION 01									
01A00	B5	40	6		8' DEEPSTER 54' STEEL			YES	APP-SEL/4 SEC 1, 8' DEEPSTER 54' STEEL VENDOR, STORAGE TANK
01A08	B6	40	6			HAND/R			
** SECTION 02									
02A01	B66	30 DUG	6		8' WOOD	HAND		YES	8' WOOD VENDOR, 10000 GPM PUMP MS, STORAGE TANK
02A02	B65	89			40' STEEL		10000 CONCRETE	YES	APP-NO WELL LISTED: MAP-LISTED IN TRACT B63
02A04					YES			750 GAL	VENDOR, 750 GAL STORAGE TANK
02A05	B12								
** SECTION 03									
03A01	B62	70 DUG		CONCRETE			626 WOOD		626 WOOD PUMP MS
03A02	B61		YES						STEEL & WOOD VENDOR
03A03	B60	42 DUG			STEEL W/WOOD WHEEL				STEEL & WOOD VENDOR
03A04	B50	50 DUG			STEEL W/WOOD WHEEL				APP-IN TRACT B5: MAP-DIFFERENT TRACT B12 WHICH IS IN SECTION 2 & 3
03A05	B5	73.5	6						APP-POLICE & FIRE STATION IN TRACT B4
03A06	B4	SHALLOW			IN PHOTO	HAND			PRESSURE TANK
03A07	B6					ELECTRIC			IN PHOTO APP-COMBINES B11 & B17, THIS MAY BE 03A08, TANK IN PHOTO
03A08	B17					ELECTRIC/R		YES	APP-POSSIBLY SECOND SHALLOW WELL 03A08 IN TRACT B44, STORAGE TANK
03A09	B42	700							NO
03A10	B43					ELECTRIC	626 CONCRETE/R	NO	626 CONCRETE PUMP MS/R, NO STORAGE
03A11	B44	500		YES		YES			APP-POSSIBLY SECOND SHALLOW WELL 03A17 IN TRACT B44
03A12	B44								APP-NO WELL LISTED: MAP-DIFFERENT TRACT B56, MAY BE 03A11
03A13	B51							YES	STORAGE TANK, & VENDOR
03A14	B56	58			YES				PRESSURE TANK
03A15	B40						626 CONCRETE	NO	626 CONCRETE PUMP MS
03A16	B38								NO STORAGE
03A17	B57								APP-NO WELL LISTED: MAP-TRACT B52, MAY BE 03A24 WHICH IS NO ON MAP
03A18	B59	SHALLOW				HAND			
03A19	B54	70	42	CONCRETE		YES			APP-NO WELL LISTED: MAP-LISTED IN TRACT B52A
03A20									APP-NO WELL LISTED: MAP-LISTED IN TRACT B53
03A21							CONCRETE		PRESSURE CONCRETE PUMP MS, PRESSURE TANK
03A22	B62								APP-NO WELL LISTED: MAP-LISTED IN TRACT B57 (APP) & B53 (APP)
03A23	B39	97	6	HEAVY CONCRETE		/R			APP-NO WELL LISTED: MAP-NOT LISTED
03A24	B52	72				YES & JACK			NO VENDOR
03A00						5" TURBINE GAS, HAND			APP-NO WELL LISTED: MAP-NOT LISTED
03A08	B54				NO				APP-NO WELL LISTED: MAP-NOT LISTED
03A09	B10				EXACT 2 TOWER		CONCRETE	750 GAL	APP-COMBINES TRACTS B11 & B17, NO OTHER WELL LISTED: MAP-03A
03A00	B11								LISTED IN B17 MAY BE THIS WELL: EXACT 2 VENDOR, 750 GAL CONCRETE PUMP MS, 750 GAL STORAGE TANK
03A07	B41				YES/R				APP-NO WELL LISTED: MAP-NOT LISTED

NRA HISTORY—REAL ESTATE APPRAISALS DATABASE

WELL	TRACT	REPORTED DEPTH (ft)	REPORTED DIAMETER (in)	REPORTED CASING TYPE	REPORTED WINDMILL	REPORTED PUMP	REPORTED PURPOSE	REPORTED TANK	HISTORICAL NOTES
03AGG B46		60			YES		10016 CONCRETE	YES	APP—"NO WELL", BUT "INVESTIGATE WATER SYSTEM": WASH IS 10' CONCRETE WINDMILL, 10016 CONCRETE PUMP IS, STORAGE TANK, APP-POSSIBLY A SECOND WELL ONLY? IN TRACT B48 W/PUMP
03AHE B48		367				6" ELECTRIC			RESERVOIR APP-WELL & RESERVOIR "COVERED UP"
03AII B49		50114-64	60412	CEMENT-CEMENT					
03AJJ B55		71 SHALLOW							
03AKK B55		42	YES		NO				NO WINDMILL
03ALL B56		60	48						APP-MAY BE 03AII2
** SECTION 04									
04A01 B13						ELECTRIC		YES	STORAGE TANK
04A02 B16		92/85 DUG		CEMENT	WOOD			YES	APP-NO WELL LISTED:APP-LISTED IN TRACT B11
04A04 B21						ELECTRIC		YES	WOOD WINDMILL, STORAGE TANK
04A05 B34		"65			STEEL, NO WHEEL/A		871083 S/LIN/A		APP-LISTS 1000 GAL TANK IN CELLAR OF SECOND HOUSE THAT HAS BEEN DESTROYED, 500 GAL STORAGE TANK
04A06 B13					YES			YES	STEEL WINDMILL/A, 8000S PUMP IS/A
04A07 B14		"60			YES	YES & PIPE			WINDMILL, & STORAGE TANK
04A08 B13A		ABOUT 87			YES				APP-NO WELL LISTED:APP-LISTED IN TRACT B13
04A09 B35					YES			YES	WINDMILL, STORAGE TANK
04A11 B36									WINDMILL, STORAGE TANK
04A12 B36									APP-NO WELL LISTED:APP-04A11 IN TRACT B36
04A13 B36									APP-NO WELL LISTED:APP-LISTED IN TRACT B1
04A14 B33									APP-NO WELL LISTED:APP-LISTED IN TRACT B2
04A15 B22		"60 DUG			YES			YES	APP-NO WELL LISTED:APP-LISTED IN TRACT B1
04A16 B26		DEEP				HAND & PIPE		YES	WINDMILL, STORAGE TANK
04A17 B36A						ELECTRIC/A		NO	NO STORAGE
04A18 B36B								STORAGE PRESSURE TANK/A	
** SECTION 06									
06A01 E3		16			IN PHOTO				APP-NO WELL LISTED:APP-NO WELL SHOWN: WINDMILL IN PHOTO
06A02 E3		40				HAND			APP-06A02, 06A03, 06A04 LISTED IN TRACT E3, RESPECTIVE DEPTH UNKNOWN-3 SHALLOW & 1 DEEP
06A03 E3		20				HAND			APP-06A01, 06A02, 06A03 LISTED IN TRACT E3, RESPECTIVE DEPTH UNKNOWN-3 SHALLOW & 1 DEEP
06A04 E3		DEEP				HAND			APP-06A01, 06A02, 06A04 LISTED IN TRACT E3, RESPECTIVE DEPTH UNKNOWN-3 SHALLOW & 1 DEEP
06A05 E2B		27							APP-06A01, 06A02, 06A03 LISTED IN TRACT E3, RESPECTIVE DEPTH UNKNOWN-3 SHALLOW & 1 DEEP
06A06 E7		50			NO/30" TOWER IN PHOTO			NO	30' WINDMILL IN PHOTO, NO STORAGE

RVA HISTORY—REAL ESTATE APPRAISALS DATABASE

** SECTION 09

WELL	TRACT	REPORTED DEPTH (ft)	REPORTED DIAMETER (in)	REPORTED CASTING TYPE	REPORTED VENDOR	REPORTED PUMP	REPORTED PUMP/HOUSE	REPORTED TANK	HISTORICAL NOTES
09A01	B85	500			YES		808 CEMENT	8" DIAM	APP-ALSO LISTS 09A02, 09A16: HAP-09A02, 09A16, 09A03 ALSO IN TRACT B85: VENDOR, 808 PUMP HS. 6" DIAM STORAGE TANK
09A02	B85	900				ELECTRIC	913-16 WOOD	PRESSURE	APP-ALSO LISTS 09A01, 09A16: HAP-09A01, 09A16, 09A16 ALSO IN TRACT B85: 913-16 WOOD PUMP HS. PRESSURE TANK
09A03	B85								APP-NO WELL LISTED: HAP-TRACT B85, MAY BE WELL 09A06 IN TRACT B74 WHICH IS LISTED AS 85' DEEP
09A04	B71	78	YES			HAND		500 GAL	APP-7' CONCRETE PVT, 500 GAL PRESSURE TANK/NS
09A05	B124	1000 AKTES			WOOD V/STEEL WHEEL	ELECTRIC	14X18 CONCRETE	NS	APP-NO OTHER WELL LISTED: HAP-09A10 ALSO IN TRACT B124: VENDOR, 14X18 CONCRETE PUMP HS. STORAGE TANK
09A06	B67	62			STEEL			NO	STEEL VENDOR, NO STORAGE
09A07	B76							STORAGE	APP-NO WELL LISTED: HAP-DIFFERENT TRACT B69, MAY BE 09A0A
09A08	B140	1106				ELECTRIC		NO	TRACT B69
09A09	B82	45410-55	3642	CEMENT		HAND		STORAGE	NO STORAGE
09A10	B142	800	YES		YES	ELECTRIC AT 200'		NO	APP-DUPLICATION RESERVOIR, CONCRETE 4'X36': HAP-DIFFERENT TRACT B81: NO STORAGE
09A11	B122	73	6			HAND		STORAGE	APP-NO OTHER WELL LISTED: HAP-09A15 ALSO IN TRACT B142: VENDOR, NO STORAGE
09A12	B79				YES			SUPPORT	APP-NO OTHER WELL LISTED: HAP-09A13 ALSO IN TRACT B122
09A13								2X6 WOOD	VENDOR, 2X6 WOOD TANK SUPPORT
09A14									APP-NO WELL LISTED: HAP-LISTED IN TRACT B142
09A15	B85	86				ELECTRIC		NO	APP-ALSO LISTS 09A01, 09A02: HAP-09A01, 09A02, 09A03 ALSO IN TRACT B85
09A16	B123	68	YES			HAND		STORAGE	TRACT B85
09A17	B73	73				YES		280 GAL	NO STORAGE
09A18	B76	75	YES		22' STEEL/R			?	APP-NO OTHER WELL LISTED: HAP-09A07 ALSO IN TRACT B76, 09A0A MAY BE 09A0A IN TRACT B69: 22' STEEL VENDOR/R
09A19	B81	70	48		YES	4" CENTRIFUGAL		2000 GAL	HAP-NOT ON MAP: VENDOR, 2000 GAL STORAGE TANK
09A20	B69	77	BELOW 7'			ELECTRIC		PRESSURE	APP-MAY BE 09A07 LISTED IN TRACT B76, 70 GAL PRESSURE TANK/70 GAL/R
09A21	B72	76	YES			HAND		PRESSURE	APP-WELL WITHIN 30' OF 10X12 CONCRETE BASEMENT, PRESSURE TANK
09A22	B75	65				ELECTRIC		NO	NO STORAGE
09A23	B80					HAND		STORAGE	NO STORAGE
09A24	B83	70				HAND	8X10-7 BRICK	YES	8X10-7 BRICK PUMP HS. STORAGE TANK
09A25	B1254B126	SHALLOW				ELECTRIC/R		PRESSURE	PRESSURE TANK/R
09A26	B74	85	YES		40' WOOD				40' WOOD VENDOR, APP-NO IMPROVEMENTS/ VENDOR IN PHOTO
09A27	B138				IN PHOTO				

RMA HISTORY—REAL ESTATE APPRAISALS DATABASE

WELL	TRACT	REPORTED DEPTH (ft)	REPORTED DIAMETER (in)	REPORTED CASTING TYPE	REPORTED VINDMILL	REPORTED PUMP	REPORTED PUMPHOUSE	REPORTED TANK	HISTORICAL NOTES
** SECTION 12									
12A03	B63	600			35' STEEL	HAND		SXS CEMENT, 750 GAL	APP-HO OTHER WELL LISTED: MAP-02A04 ALSO IN TRACT B63:35' STEEL VINDMILL, SXS CEMENT 750 GAL STORAGE TANK
** SECTION 14									
14A00	B32	650 DEEP				ELECTRIC & PIPE			
** SECTION 19									
19A01	D11								
** SECTION 22									
22A01	A49	524				ELECTRIC	3' CIRC CONCRETE	NO STORAGE/ IN PHOTO	APP-HO OTHER WELL LISTED:MAP-22A02 ALSO IN TRACT A49: 3' CIRC CONCRETE PUMP IS, NO STORAGE/IN PHOTO
22A02									
22A03	A1	500/450				ELECTRIC	8X8 CEMENT/R	PRESSURE /NO STORAGE	APP-HO WELL LISTED:MAP-LISTED IN TRACT A49 PRESSURE 8X8 CEMENT PUMP IS/R, PRESSURE TANK/NO STORAGE
** SECTION 23									
23A01	A54								IN PHOTO GAS PUMP IN PHOTO:APP-HO OTHER WELL LISTED:MAP-23A02, 23A06 ALSO IN TRACT A54: TANK IN PHOTO
23A02	A2	460	6			HAND	18X12 WOOD/R		APP-HO WELL LISTED:MAP-LISTED IN TRACT A54
23A04									APP-HO WELL LISTED:MAP-LISTED IN TRACT A3
23A05	A3	520	6		30' STEEL	NO		NO	APP-HO OTHER WELL LISTED:MAP-23A03 ALSO IN TRACT A3: 30' STEEL VINDMILL, NO STORAGE
23A06	A4	418			YES			NO	APP-HO OTHER WELL LISTED:MAP-23A07 ALSO IN TRACT A4: VINDMILL, NO STORAGE
23A07									APP-HO WELL LISTED:MAP-LISTED IN TRACT A4
** SECTION 24									
24A01									APP-HO WELL LISTED:MAP-LISTED IN TRACT D10
24A02	D2A09	1000				ELECTRIC		YES	APP-PROBABLY IN TRACT D9, STORAGE TANK
24A03	D1	450/750	5			ELECTRIC		PRESSURE	APP-ALSO LISTS 21A05:MAP-23A04, 23A05, 23A06 ALSO IN TRACT 1 PRESSURE TANK
24A04	D1							NO	APP-HO WELL LISTED:MAP-TRACT D1
24A05	D1	10X12	6			HAND		NO STORAGE	APP-""IN BASEMENT", IS 20X12CONCRETE, NO STORAGE, ALSO LIST 24A03:MAP-24A03, 24A04, 24A06 ALSO IN TRACT D1
24A06	D1							YES	APP-HO WELL LISTED:MAP-TRACT D1
24A07	D2A09					ELECTRIC			APP-PROBABLY IN TRACT D2, STORAGE TANK
24A08									1956 USGS
** SECTION 25									
25A01	D10	SHALLOW				HAND			APP-HOUSE IN S1/2 SEC 24, ALSO LISTS 25A02:MAP-25A02, 25A03 ALSO IN TRACT D10
25A02	D10	600	YES		8' DEEP/STEEL/R				APP-VINDMILL, ALSO LISTS 25A03:MAP-25A03, 25A01 ALSO IN TRACT D10:APPEARS TO BE 2 VINDMILLS ON 25A02

RMA HISTORY-REAL ESTATE APPRAISALS DATABASE

WELL	TRACT	REPORTED DEPTH (ft)	REPORTED DIAMETER (in)	REPORTED CASING TYPE	REPORTED VENDOR	REPORTED PUMP	REPORTED PURPOSE	REPORTED TANK	HISTORICAL NOTES
25A03	D10	170			8" DEEPSTER/R				APP-NO WELL LISTED, VENDOR:RMP-TRACT D10:RAY ONLY BE SECOND VENDOR ON WELL 25A02 TRACT D10
** SECTION 26									
26A01	A87	SHALLOW				HAND			APP-TENDANTS IS
26A02	A59					ELECTRIC			APP-LARGE RANCH
26A03	A59	800							
** SECTION 27									
27A01	A58	620			IN PHOTO	ELECTRIC	7X14 CONCRETE	YES	VENDOR IN PHOTO, 7X14 CONCRETE PUMP IS, STORAGE TANK
27A02		-45				ELECTRIC			APP-NO WELL LISTED:OP-LISTED IN TRACT A58A OR A58B
27A03	A55					7.5" PIT			APP-NO OTHER WELL LISTED:RMP-27A02 ALSO IN TRACT A55
27A04	A55C	35				HAND			
27A05						HAND			APP-NO WELL LISTED:RMP-LISTED IN TRACT A46
27A06	A57B	58		YES		HAND			APP-BRICK & STONE IS
27A07	A57	54		YES		HAND			
** SECTION 28									
28A01	A81	18				HAND			RMP-DIFFERENT ADJACENT TRACT A54
28A02						HAND			APP-NO WELL LISTED:RMP-LISTED IN TRACT A44
28A03	A56	SHALLOW				YES			APP-NO IMPROVEMENTS
28A04	A56A	53.5	60	CONCRETE		YES	12X14		APP-CONFUSING DEPTH DESCRIPTION, PHOTO SHOWS 12X14 CONCRETE
28A05	A56A	31/24/18	4/-/-	-/CONC/-		CENTRIFUGAL/R	CONCRETE/R		PUMP IS BURIED/R
28A06	A82								
** SECTION 30									
30A01	D20	45 DRILLED			6" DEEPSTER 15'	AT 80'	8X8 CONCRETE	NO	6" DEEPSTER 15' VENDOR
30A02	D21	610		TO 500'	YES				RMP-DIFFERENT TRACT D20: VENDOR, 8X8 CONCRETE PUMP IS, NO
30A03									STORAGE
30A04	D14	450/600			35' WOOD				APP-NO WELL LISTED:RMP-LISTED IN TRACT D21
30A05	D13	DEEP DRILL			8" DEEPSTER 30"	HAND		YES	35' WOOD VENDOR
30A06	D20	45 DRILLED							30' VENDOR, STORAGE TANK
** SECTION 31									
31A01	D30		YES		YES	/R		YES	VENDOR
31A02	D26				YES	HAND			APP-NO OTHER WELL LISTED:RMP-31A03 ALSO IN TRACT
31A03	D26								D26:VENDOR, STORAGE TANK
31A04	D25								APP-NO WELL LISTED:RMP-TRACT D26
31A05	D31	190			YES		8X10 WOOD		APP-NO WELL LISTED:RMP-TRACT D25
31A06	D28								APP-"PART FILLED", 20" CASTING/R, VENDOR, 8X10 WOOD PUMP
31A07	D28	50							HS:APP-ALSO LISTS 31A07, 31A08:RMP-31A06, 31A07, 31A08 ALSO I
31A08	D28	50							TRACT D31
									APP-NO WELL LISTED:RMP-TRACT D28
									APP-ALSO LISTS 31A05, 31A08:RMP-31A05, 31A06, 31A08 ALSO IN
									TRACT D28
									APP-ALSO LISTS 31A05, 31A07:RMP-31A05, 31A06, 31A07 ALSO IN
									TRACT D28

R/A HISTORY—REAL ESTATE APPRAISALS DATABASE

WELL	TRACT	REPORTED DEPTH (ft)	REPORTED DIAMETER (in)	REPORTED CASING TYPE	REPORTED VENDOR	REPORTED PUMP	REPORTED PURPOSE	REPORTED TANK	HISTORICAL NOTES
31A09 D25		40 DUG		CEMENT					APP-NO OTHER WELL LISTED:MAP-31A04 ALSO IN TRACT D25 1956 USGS
31A0X									
** SECTION 33									
31A01 A76									APP-NO WELL LISTED:MAP-DIFFERENT TRACT A74
31A02 A76									APP-NO WELL LISTED:MAP-DIFFERENT TRACT A74
31A03 A93		150			STEEL				10X10X9 APP-NO OTHER WELL LISTED:MAP-31A04 ALSO IN TRACT A93:STEEL BRUCKACE VENDOR, 10X10X9 BRUCK & COBENT STORAGE TANK
31A04									APP-NO WELL LISTED:MAP-LISTED IN TRACT A93
31A05 A88									APP-NO WELL LISTED:MAP-TRACT A88
31A06 A88									APP-NO WELL LISTED:MAP-TRACT A88
31A07									APP-NO WELL LISTED:MAP-LISTED IN TRACT A79
31A08 A78									APP-NO WELL LISTED:MAP-DIFFERENT TRACT A79:42 GAL STORAGE TANK/R
31A09 A76									APP-NO WELL LISTED:MAP-TRACT A76
31A10 A76									APP-NO WELL LISTED:MAP-DIFFERENT TRACT A75
31A11 A75									APP-NO WELL LISTED:MAP-TRACT A75
31A1A A74									
31A1B A79A		SHALLOW							
31A1C A79C		60 DUG							
31A1D A79D		SHALLOW							
31A1E A79E		54							
31A1F A79F		SHALLOW							
31A1G A94		ABOUT 50		YES	IN PHOTO	HAND			APP-NEW IS, MAY BE 11A07
									APP-CORNER BLOCK IS, NO IMPROVEMENTS
									APP-CONSOLIDATED V/TRACT A79B, MAY BE 11A07, 80 GAL STORAGE TANK
									VENDOR, IN PHOTO, NO STORAGE/IN PHOTO
** SECTION 34									
34A01 A89									APP-NO IMPROVEMENTS:MAP-TRACT 89
** SECTION 35									
35A01 A91					/R	HAND			VENDOR/R, NO STORAGE
35A02 A90		35		YES			11X10 CONCRETE	NO STORAGE 1000 GAL	VENDOR, 11X10 CONCRETE PUMP IS, 1000 GAL STORAGE TANK
35A03 A92		DEEP		YES		ELECTRIC		YES	APP-NO OTHER WELL LISTED:MAP-35A04 ALSO IN TRACT A92:VENDOR, STORAGE TANK
35A04									APP-NO WELL LISTED:MAP-LISTED IN TRACT A92
35A0A A97		75 DRILLED			STEEL				STEEL VENDOR
** SECTION 36									
36A01 D23		SHALLOW			8' DEEPSTER 30' STEEL	ELECTRIC		8X8 CEMENT	8' DEEPSTER 30' STEEL VENDOR, 8X8 CEMENT TANK
36A02 D24				YES					VENDOR, 10X10 CEMENT PUMP IS
36A0A D24				MAYBE					MAY BE VENDOR

APPENDIX D

United States Geological Survey
Well Inventory Database

Task 37
09/23/88

USGS 1955 WELL INVENTORY DATABASE

WELL	LOCATION	DEPTH	REPORTED CASING DIAMETER (in)	CASING TYPE	AQUIFER	HEIGHT ABOVE SURFACE (ft)	REPORTED PUMP	SKETCH	NOTES
** SECTION 04									
04A10	SVSESV04	72.5 DRILLED	6	GALV		0.25	NO	NO	
** SECTION 09									
09A17	SVSVSV09	60.3 DRILLED	6	GALV		0.6	NO	GOOD	
09A18	WENWV09	71.3 DRILLED	5	GALV		0.3	NO	GOOD	
** SECTION 19									
19A01	SVSVSV19	14.5 DRILLED	6	STOVE PIPE	QAL	0.3	NO	GOOD	
** SECTION 22									
22A01	MESESE22	32.3 DUG	36	CONCRETE		1.0	NO	GOOD	1962 COE
22A02	SESVNE22	178.5 DRILLED	4.5	IRON		4.2	NO	YES	SEE DESCRIPTION
** SECTION 23									
23A01	NESESV23	63.0	24	IRON		2.1	CENTRIFUGAL	GOOD	SKETCH SHOWS 2 MORE VI
23A03	SVSVNE23	47.0 DUG	48	CONCRETE		0.25	NO	GOOD	1962 COE
23A04	SEWNV23	NH DRILLED	5	IRON		0.4	WINDHILL	NO	1962 COE
23A06	SESENE23	30.6 DUG	42.5	CONCRETE		1.0/0.7	NO	GOOD	
23A07	SESENE23								
** SECTION 24									
24A01	SESENV24	33.3 DUG	24	CONCRETE		0.7	NO	GOOD	1962 COE
24A04	SVSVNV24	48.5 DUG				0.5	NO	NO	SKETCH SHOWS 2 MORE VI
24A06	SVSVNE24	22 DRILLED	8	IRON	SAND&GRAVEL		MYERS CYLINDER	NO	MAY NOT BE 24A06
24AXX								NO	DRILLED 1942
									SCNM 13-22'
									8391 ON MAP2
** SECTION 26									
26A01	WVNVNV26	39.4 DUG	28	BRICK		0.6	NO	NO	1962 COE
26A02									
** SECTION 27									
27A01	WENWNV27	35.7 DRILLED	7	IRON		7	NO	NO	1962 COE
27A02	SESESE27	57.8 DRILLED	3.5	IRON		0.5	NO	GOOD	
** SECTION 28									
28A01	WVNESE28	34.3&18.9=53.2 DRILLED	44&18	CONCRETE&IRON		0	NO	GOOD	
** SECTION 30									
30A01	WVSVSV30	12.1 DRILLED	6	IRON	QAL	0.3	NO	GOOD	
** SECTION 31									
31A04	WVNVNV31	28.7 DRILLED	12	GALV	QAL	1.2	NO	GOOD	

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USGS 1955 WELL INVENTORY DATABASE

WELL	LOCATION	DEPTH	REPORTED CASING DIAMETER (in)	CASING TYPE	AQUIFER	HEIGHT ABOVE SURFACE (ft)	REPORTED PUMP	SKETCH	NOTES
31A06	SWNESE31	41.2 DUG	30	CONCRETE	QAL	1.8	NO	GOOD	SKETCH SHOWS 1 MORE W/
31A07	MYWNE31	DRILLED	6	IRON		3	ELECTRIC JET	GOOD	DRILLED 1953
** SECTION 33									
33A08	MVSVNV33	47.6 DRILLED	6.25	IRON		0.5	NO	GOOD	SKETCH SHOWS 1 MORE W/
** SECTION 35									
35A01	WESVNV35	126.8 DRILLED	3.5	BLACK IRON		0.4	NO	NO	
35A02	SEVNV35	3565.3-40.3 DUG	3048	BRICK/IRON		1.3	NO	GOOD	1962 COE
35A04									
** SECTION 36									
36A01									1962 COE
36A02									1962 COE

APPENDIX E

1960 U.S. Army Corps of Engineers
Plugging Operations Database

Task 37
09/23/88

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COE PLUGGING OPERATIONS (1960) DATABASE

WELL	REPORTED DEPTH (ft)	REPORTED CASING DIAMETER (in)	CASING TYPE	REPORTED PUMP	CLEANED DEPTH (ft)	BLASTED DEPTHS (ft)	VOLUME & HEIGHT OF GROUT PLACED IN WELL	NOTES
** Section 22								
22A01	REPORTED 500'	6	IRON		TO 290'	280	115	4X4X6 CONCRETE PIT TOP CEMENT IN PIT
						123	155	
						40	120GAL	
22A02	REPORTED 524'	36	CONCRETE	HAND & 1 1/4" PIPE/R	TO 34'	NO	NO	LEFT COVERED 1962
22A03	REPORTED 500'	4	IRON	HAND & 1 1/4" PIPE/R	TO 292'	280	115	TOP CEMENT 15'
						100	95	
						37	70GAL	
** Section 23								
23A04	REPORTED 460'							UNABLE TO LOCATE 1962
								RVA REPORTED NAZED & FILLED
23A05	REPORTED 520'	4	IRON	VORTEXILL, PIPE, HAND/R	TO 300'	300	200	TOP CEMENT 3'
						160	100	
						70	110	
						30	75GAL	
23A06	REPORTED 480'							UNABLE TO LOCATE 1962
								RESIDENT RPTD NAZED & FILLED
** Section 24								
24A01	NOT REPORTED	6 3/4	GALV	DEBRIS IN WELL	TO 35'	35	100GAL	TOP CEMENT 5.5'
24A06	REPORTED 450'	30	GALV		TO 50'	NO	NO	LEFT COVERED 1962
** Section 26								
26A01	REPORTED 27'							APPEARED 27'
								HAN BE 26A02 (700') RVA REPORTED NAZED
26A02	REPORTED 700'	30	BRICK		TO 30'	NO	NO	LEFT COVERED 1962
								MAY BE 26A01 (27') NOT 26A02
** Section 27								
27A01	REPORTED 620'	5	IRON		TO 280'	280	500	4X6X1/2 CONCRETE PIT
						160	300	TOP CEMENT 16'
						58	110GAL	
27A02	NOT REPORTED	7 1/8	GALV		TO 58'	53	55	REDROCK AT 58'
						33	50GAL	6X6X7.5 CONCRETE PIT
								TOP CEMENT 15'
** Section 35								
35A01	REPORTED 124'	4	IRON		TO 128'	100	80	NO STOPUP
						37	60GAL	TOP CEMENT 8'
35A04	REPORTED 650'	5 1/2	IRON		TO 400'	400	250	4.5DIMS CONCRETE PIT FILLED
						250	190	TOP CEMENT 10'
						70	50	
						35	50GAL	
** Section 36								
36A01	NOT REPORTED							UNABLE TO LOCATE 1962
								RVA REPORTED NAZED & FILLED

06/26/88

CZE PLUGGING OPERATIONS (1960) DATABASE

WELL	REPORTED DEPTH (ft)	REPORTED CASING DIAMETER (in)	CASING TYPE	REPORTED PUMP	CLEANED DEPTH (ft)	BLASTED DEPTH (ft)	VOLUME & HEIGHT OF GROUT PLACED IN WELL	NOTES
36102	NOT REPORTED							UNABLE TO LOCATE 1963 POA REPORTED RAZED & FILLED

APPENDIX F

Comparative Database

Task 37
09/23/88

TASK 37 DATA COMPARISON

WELL NO	TRACT APPRAISALS	1946 RMA DRAWING	DEPTH		1956 USES INVENTORY	CASING DIAMETER & TYPE		1942 APPRAISALS	1946 RMA DRAWING	1956 USES INVENTORY	1962 COE PLUGGING	NOTES	PHOTO IN APPR
			1942 APPRAISALS	1946 RMA DRAWING									
** SECTION 01													
01A04	E5		40					6				//APP-SE1/4 SEC 1, 8" BEMPSTER 64' STEEL WINDMILL, STORAGE TANK // // //	
01A08	E6		40					6				// // // //	
** SECTION 02													
02A01	B66		30 DUG				4	6				//8" WOOD WINDMILL //p/wg // //	
02A02	B65		89				6					//40" STEEL WINDMILL, 10X10 CONC PUMP HS, STORAGE TANK //capped-no data // //	
02A03	B63		600									//APP-NO OTHER WELL LISTED: MAP-02A04 ALSO IN TRACT B63:35" STEEL WINDMILL, 535 CEMENT 750 GAL STORAGE TANK //filled // //	
02A04	B63											//APP-NO WELL LISTED:MAP-LISTED IN TRACT B63 //filled // //	
02A05	B12		630									//WINDMILL, 750 GAL STORAGE TANK //bldg 373 ", req by shell // //	4163
** SECTION 03													
03A01	B62		70 DUG	35			40					//636 WOOD PUMP HS // // //	
03A02	B61			44			6	YES				// // // //	
03A03	B60		42 DUG									//STEEL & WOOD WINDMILL //filled // //	
03A04	B50		50 DUG									//STEEL & WOOD WINDMILL //water, no data // //	
03A05	B12		73.5	69			6	6				//APP-IN TRACT B5:MAP-DIFFERENT TRACT B12 WHICH IS IN SECTIONS 2 & 3 // // //	
03A06	B4		SHALLOW	67			6					//APP-POLICE & FIRE STATION IN TRACT B4 // // //	
03A07	B6			77			8					//PRESSURE TANK //bldg 644, req by shell // //	
03A08	B37											//APP-COMBINES B11 & B37, THIS MAY BE 03A08, TANK IN PHOTO // // //	42738 4274
03A09	B42		700	700								//APP-POSSIBLY SECOND SHALLOW WELL 03A04 IN TRACT B44, STORAGE TANK //filled * // //	4300
03A10	B43			59			18					//8XB CONCRETE PUMP HS/R, NO STORAGE //4' brick wall // // //	

TASK 37 DATA COMPARISON

WELL NO	TRACT	DEPTH		CASING DIAMETER & TYPE		DRAWING INVENTORY		NOTES	PHOTO IN APPR
		1942	1946	1942	1946	1942	1946		
APPRAISALS	RMA DRAWING	APPRAISALS	RMA DRAWING	APPRAISALS	RMA DRAWING	APPRAISALS	RMA DRAWING		
0346G	B46	60		50814-64		50812		//APP-"NO WELL", BUT "INVESTIGATE WATER SYSTEM": WASH MS 10X12 CONCRETE // // //	
0346H	B48	367						//WINDMILL, 10136 CONCRETE PUMP HS, STORAGE TANK, APP-POSSIBLY A SECOND WELL Q3A77 IN TRACT B48 N/PUMP // //	4324
03A11	B49							// // // //	
03A1J	B55			71 SHALLOW				//APP-WELL & RESEVOIR "COVERED UP" // // //	
03A1K	B55	42						//NO WINDMILL // // //	
03A1L	B56	60						//APP-MAY BE Q3A12 // // //	
** SECTION 04									
04A01	B33		71					//STORAGE TANK //dry // //	
04A02	B31							//APP-NO WELL LISTED:MAP-LISTED IN TRACT B31 //filled // //	
04A03	B16	92/85 DUG	54					//WOOD WINDMILL, STORAGE TANK // // //	
04A04	B21		57					//APP-LISTS 1000 GAL TANK IN CELLAR OF SECOND HOUSE THAT HAD BEEN DESTROYED, 500 GAL STORAGE TANK //dry // //	
04A05	B34	*65	51					//STEEL WINDMILL/R, 81102B PUMP HS/R //dry // //	
04A06	B13							//WINDMILL, & STORAGE TANK //filled // //	
04A07	B17		65					//APP-NO WELL LISTED:MAP-LISTED IN TRACT B13 // // //	
04A08	B14	*60	60					// //filled * // //	
04A09	B3A	ABOUT 87	78					//WINDMILL // // //	4241
04A10	B35		72	72.5 DRILLED				//WINDMILL, STORAGE TANK // // //	
04A11	B36							//APP-NO WELL LISTED:MAP-Q4A11 IN TRACT B36 //filled // //	
04A12	B1							//APP-NO WELL LISTED:MAP-LISTED IN TRACT B1 //derby gate // //	
04A13	B2							//APP-NO WELL LISTED:MAP-LISTED IN TRACT B2 //filled // //	

TASK 37 DATA COMPARISON

WELL NO	1942 APPRAISALS	1946 RMA DRAWING	1942 APPRAISALS	1946 RMA DRAWING	1956 USES INVENTORY	1962 COE	1962 COE	CASING DIAMETER & TYPE	1946 RMA DRAWING	1956 USES INVENTORY	1962 COE	1962 COE	NOTES	PHOTO IN APPR
04A14		B1											//APP-MO WELL LISTED:MAP-LISTED IN TRACT B1 //unable to locate // //	
04A4A	B33												//WINDMILL, STORAGE TANK // // //	
04A8B	B22												//NO STORAGE // // //	
04ACC	B26												//PRESSURE TANK/R // // //	
04AD0	B32												// // // //	
04AEE	B36A												// // // //	4252
04AFF	B36B												//APP-MO WELL LISTED:MAP-MO WELL SHOWN: WINDMILL IN PHOTO // 4269 // //	
** SECTION 06														
06A01	E3												//APP-06A02,06A03,06A04 LISTED IN TRACT E3, RESPECTIVE DEPTHS UNKNOWN-3 SHALLOW & 1 DEEP // // //	
06A02	E3												//APP-06A01,06A03,06A04 LISTED IN TRACT E3, RESPECTIVE DEPTHS UNKNOWN-3 SHALLOW & 1 DEEP // // //	
06A03	E3												//APP-06A01,06A02,06A04 LISTED IN TRACT E3, RESPECTIVE DEPTHS UNKNOWN-3 SHALLOW & 1 DEEP // // //	
06A04	E3												//APP-06A01,06A02,06A03 LISTED IN TRACT E3, RESPECTIVE DEPTHS UNKNOWN-3 SHALLOW & 1 DEEP // // //	
06A05	E2B												// // // //	
06A06	E7												//30' WINDMILL IN PHOTO, NO STORAGE // // //	5310
** SECTION 09														
09A01	B05												//APP-ALSO LISTS 09A02,09A16:MAP-09A02,09A16,09A03 ALSO IN TRACT B05: WINDMILL, 818 PUMP HS, & 8' DIAM STORAGE TANK //dry // //	4532
09A02	B05												//APP-ALSO LISTS 09A01,09A16:MAP-09A01,09A03,09A16 ALSO IN TRACT B05: 919-16 WOOD PUMP HS, PRESSURE TANK //filled // //	4529
09A03	B05												//APP-MO WELL LISTED:MAP-TRACT B05, MAY BE WELL 09A0H IN TRACT B74 WHICH IS LISTED AS 85' DEEP //dropped 103' no water // //	
09A04	B71												//APP-7' CONCRETE PIT, 500 GAL PRESSURE TANK/HS // // //	

TASK 37 DATA COMPARISON

WELL NO	1942 APPRAISALS	1946 RMA DRAWING	1942 APPRAISALS	1946 RMA DRAWING	1956 USGS INVENTORY	1962 COE PLUGGING	1942 APPRAISALS	1946 RMA DRAWING	1956 USGS INVENTORY	1962 COE PLUGGING	NOTES	PHOTO IN APPR
09A05	B124	B124	1000 ARTES	1000			30				//APP-NO OTHER WELL LISTED:MAP-09A10 ALSO IN TRACT B124: WINDMILL, 14X18 CONCRETE PUMP HS. STORAGE TANK //brick walled, cased below * // //	4.99
09A06	B67	B67	62	56			6				//STEEL WINDMILL, NO STORAGE // // //	
09A07	B76	B69		77							//APP-NO WELL LISTED:MAP-DIFFERENT TRACT B69, MAY BE 09A0A IN TRACT B69 //dry, covered w/concrete house // //	
09A08	F140	B140	DUG	44			36				//NO STORAGE //Bldg 614 // //	
09A09	B82	B33	45&10-55	55		36&2 CEMENT	40				//APP-IRRIGATION RESEVOIR, CONCRETE 4'X36':MAP-DIFFERENT TRACT B83: NO STORAGE // // //	
09A10		B124		1000							//APP-NO WELL LISTED:MAP-LISTED IN TRACT B124 //filled * // //	
09A11	B142	B142	800	800		YES					//APP-NO OTHER WELL LISTED:MAP-09A15 ALSO IN TRACT B142 WINDMILL, NO STORAGE //filled * // //	
09A12	B122	B122	73	73		6					//APP-NO OTHER WELL LISTED:MAP-09A13 ALSO IN TRACT B122 //filled // //	
09A13		B122									//APP-NO WELL LISTED:MAP-LISTED IN TRACT B122 //filled // //	
09A14	B79	B79		52			36				//WINDMILL, 2X6 WOOD TANK SUPPORT // // //	
09A15		B142									//APP-NO WELL LISTED:MAP-LISTED IN TRACT B142 // // //	
09A16	B85	B85	86	76			6				//APP-ALSO LISTS 09A01,09A02:MAP-09A01,09A02,09A03 ALSO IN TRACT B85 // // //	
09A17	B123	B123	68	61	60.3 DRILLED	YES	6		6		//NO STORAGE // // //	
09A18	B73	B73	73	72	71.3 DRILLED		6		5		//280 GAL TANK ? // // //	
09A19	B76&B70	B76	75	54		YES					//APP-NO OTHER WELL LISTED:MAP-09A07 ALSO IN TRACT B76. 09A07 MAY BE 09A0A IN TRACT B69: 22' STEEL WINDMILL/R //dry // //	
09A20	B81	B81	70	58		48	6				//MAP-NOT ON MAP: WINDMILL, 2000 GAL STORAGE TANK //no marker, no cover, no number // //	4504
09A44	B69					BELOW 7'					//APP-MAY BE 09A07 LISTED IN TRACT B76, 70 GAL PRESSURE TANK/R // // //	

TASK 37 DATA COMPARISON

WELL NO	1942 APPRAISALS	1946 RMA DRAWING	1942 APPRAISALS	1946 RMA DRAWING	DEPTH	1956 USGS INVENTORY	CASING DIAMETER & TYPE			1962 COE	DRAWING INVENTORY PLUGGING	NOTES	PHOTO IN APPR
							1942 APPRAISALS	1946 RMA	1956 USGS				
23A05	A3	A3	520	520	520	MM DRILLED	6		5	IRON	4	IRON	3060
23A06	A4	A4	418	480	480		6					APP-NO OTHER WELL LISTED: MAP-23A03 ALSO IN TRACT A3: 30' STEEL WINDMILL, NO STORAGE //covered, no data * // //TOP CEMENT 3'	
23A07	A4	A4	34	30.6 DUG	42.5	CONCRETE	48					APP-NO OTHER WELL LISTED: MAP-23A07 ALSO IN TRACT A4: WINDMILL, NO STORAGE //req by shell * //1962 COE //UNABLE TO LOCATE 1962 RESIDENT RPTD RAZED & FILLED	
** SECTION 24													
24A01	D10	D10										APP-NO WELL LISTED: MAP-LISTED IN TRACT A4 // // //	
24A02	D2A09	D9	1000	77	77		8					APP-NO WELL LISTED: MAP-LISTED IN TRACT D10 //no data, req by shell //1962 COE //TOP CEMENT 5.5'	
24A03	D1	D1	450/750	44	44		5	6				APP-PROBABLY IN TRACT D9, STORAGE TANK //req by shell // //	
24A04	D1	D1	33.3 DUG	34	34		24					APP-ALSO LISTS 23A05: MAP-23A04, 23A05, 23A06 ALSO IN TRACT D1: PRESSURE TANK // // //	
24A05	D1	D1	10X12	20	20		6					APP-NO WELL LISTED: MAP-TRACT D1 // //SKETCH SHOWS 2 MORE WELLS //	
24A06	D1	D1	450	450	450							APP-"IN BASEMENT", HS 20X32CONCRETE, NO STORAGE, ALSO LISTS 24A03: MAP-24A03, 24A04, 24A06 ALSO IN TRACT D1 // // //	
24A0A	D2A09											APP-NO WELL LISTED: MAP-TRACT D1 //8" pipe, req shell //MAY NOT BE 24A06 //LEFT COVERED 1962	
24A1X												APP-PROBABLY IN TRACT D2, STORAGE TANK // // //	
** SECTION 25													
25A01	D10	D10	SHALLOW	79	79		6					APP-HOUSE IN S1/2 SEC 24, ALSO LISTS 25A02: MAP-25A02, 25A03 ALSO IN TRACT D10 //req by shell // //	
25A02	D10	D10	600	19	19		YES	6				APP-WINDMILL, ALSO LISTS 25A03: MAP-25A03, 25A01 ALSO IN TRACT D10: APPEARS TO BE 2 WINDMILLS ON 25A02 //MAY // //	5143
25A03	D10	D10	170									APP-NO WELL LISTED, WINDMILL: MAP-TRACT D10: MAY ONLY BE SECOND WINDMILL ON WELL 25A02 TRACT D10 //filled // //	5143

TASK 37 DATA COMPARISON

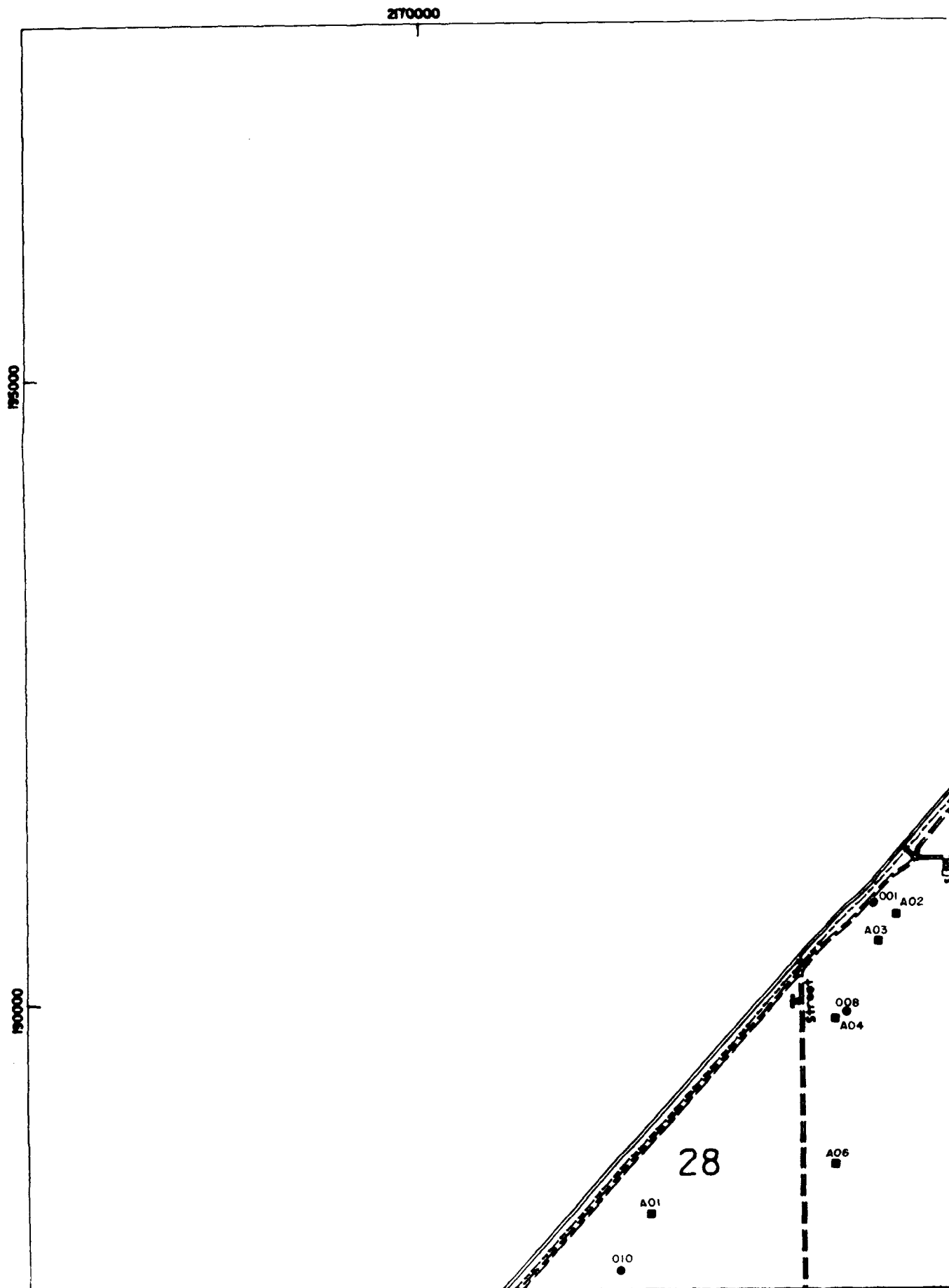
WELL NO	1942 APPRAISALS	1946 RMA DRAWING	1942 APPRAISALS	1946 RMA DRAWING	DEPTH	CASING DIAMETER & TYPE			DRAWING INVENTORY	PLUGGING	NOTES	PHOTO IN APPR
						1942 APPRAISALS	1946 RMA	1946 COE				
** SECTION 26												
26A01 AB7	AB7	SMALLOW	27			8					//dry //1962 COE //APPEARED>27' MAY BE 26A02(700')RMA REPORTED RAZED	
26A02 AS9	AS9	700		39.4 DUG		36	28 BRICK	30 BRICK			//APP-TEMPANTS NS //dry * // //LEFT COVERED 1962 MAY BE 26A01 (27") NOT 26A02	
26A03 AS9	AS9	800	48			36					//APP-LARGE RANCH //dry // //	
** SECTION 27												
27A01 AS9	AS9	620	620			96		5 IRON			//MINDMILL IN PHOTO, 7X14 CONCRETE PUMP HS, STORAGE TANK //conc frame, well covered no data * //1962 COE //416X11/2 CONCRETE PIT TOP CEMENT 16'	3964
27A02	AS5B	35.7 DRILLED				96	7 IRON	7 1/8 GALV			//APP-NO WELL LISTED:MAP-LISTED IN TRACT AS5A OR AS5B //conc frame, well covered no data // //BEDROCK AT 50' 616X7.5 CONCRETE PIT TOP CEMENT 15'	
27A03 AS5	AS5	*45	45								//APP-NO OTHER WELL LISTED:MAP-27A02 ALSO IN TRACT AS5 //filled * // //	
27A04 AS5C	AS5C	35	23								//dry // //	
27A05	AB6	57.8 DRILLED	58			6	3.5 IRON				//APP-NO WELL LISTED:MAP-LISTED IN TRACT AB6 // //	
27A06 AS7B	AS7B	58				36					//APP-BRICK & STONE WS //dry, drilled below pit, req by shell // //	
27AAA AS7		54									// // // //	
** SECTION 28												
28A01 AB1	AS6A	18 DRILLED	48	34.3818, 9=53.2		4	44818 CONCRETE&IRON				//MAP-DIFFERENT ADJACENT TRACT AS6A // //	
28A02	AB4		47			48					//APP-NO WELL LISTED:MAP-LISTED IN TRACT AB4 // //	
28AAA AS6		SHALLOW									//APP-NO IMPROVEMENTS // //	
28AB8 AS6A		53.5				60	CONCRETE				// // // //	
28ACC AB2		31/24/18									//APP-CONFUSING DEPTH DESCRIPTION, PHOTO SHOWS 12X14 CONCRETE PUMP HS BURIED/R // //	

TASK 37 DATA COMPARISON

WELL NO	1942 APPRAISALS	1946 RMA DRAWING	1942 APPRAISALS	1946 RMA DRAWING	1956 USGS INVENTORY	1962 COE DRAWING INVENTORY	1962 COE PLUGGING	PHOTO IN APPA
TRACT	1946 APPRAISALS	1946 RMA DRAWING	1946 APPRAISALS	1946 RMA DRAWING	1946 USGS INVENTORY	1946 USGS INVENTORY	1946 USGS INVENTORY	1946 USGS INVENTORY
DEPTH	1942 APPRAISALS	1946 RMA DRAWING	1942 APPRAISALS	1946 RMA DRAWING	1946 USGS INVENTORY	1946 USGS INVENTORY	1946 USGS INVENTORY	1946 USGS INVENTORY
DIAMETER & TYPE	1942 APPRAISALS	1946 RMA DRAWING	1942 APPRAISALS	1946 RMA DRAWING	1946 USGS INVENTORY	1946 USGS INVENTORY	1946 USGS INVENTORY	1946 USGS INVENTORY
30A01	D20	020	45 DRILLED 45	12.1 DRILLED	6	6	IRON	5185
30A02	D21	020	610		36	36		5190
30A03	D21	021			TO 500'			
30A04	D14		450/600					
30A05	D13		DEEP DRILL					5165
30A06	D20	020	45 DRILLED					
31A01	D30	030	25		YES	36		5219
31A02	D26	026	26			6		
31A03	D26	026						
31A04	D25	025	40	28.7 DRILLED		12	12 GALV	
31A05	D31	028	190	45		48		
31A06	D28	028	49	41.2 DUG		30	CONCRETE	
31A07	D28	028	50	50				
31A08	D28	028	50	190		6		
31A09	D25	025	40 DUG					
31A11								

TASK 37 DATA COMPARISON

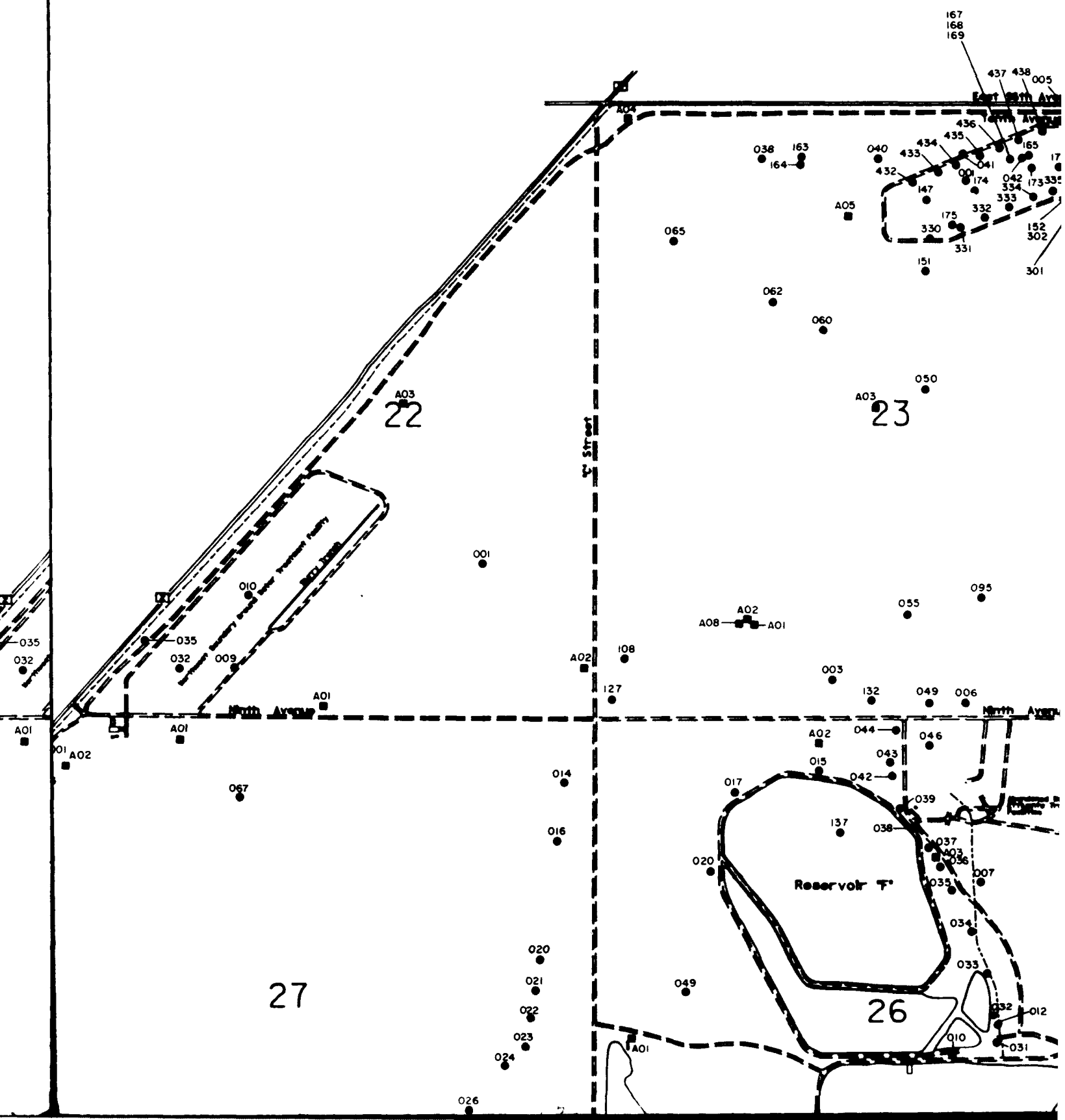
WELL NO	1942 APPRAISALS	1946 BSA DRAWING	1942 APPRAISALS	DEPTH 1946	CASING DIAMETER & TYPE			1942 APPRAISALS	1946 BSA DRAWING	1956 USGS INVENTORY	1962 COE PLUGGING	NOTES	PHOTO IN APPR
					1942 APPRAISALS	1946 BSA DRAWING	1956 USGS INVENTORY						
35A01	SECTION 36	A91	124	126.8 DRILLED	4	3.5 BLACK IRON	4	1962 COE	1956 USGS INVENTORY	1946 BSA DRAWING	1942 APPRAISALS	1946 BSA DRAWINGS //1946 BSA DRAWINGS //1956 USGS INVENTORY //1962 COE PLUGGING	4073
35A02	A90	A90	35	3545.3-40.3 DUG	36	3048 BRICKIRON						//WINDMILL, 13X10 CONCRETE PUMP HS. 1000 GAL STORAGE TANK //dry // //	
35A03	A92	A92	DEEP									//APP-HO OTHER WELL LISTED:MAP-35A04 ALSO IN TRACT A92:WINDMILL, STORAGE TANK //dry, req by shell // //	
35A04	A92	A92	650		6	5 1/2 IRON						//APP-HO WELL LISTED:MAP-LISTED IN TRACT A92 //8311 idlenoile * //1962 COE //4.501X16 CONCRETE PIT FILLED TOP CEMENT 10'	
35AAA	A97		75 DRILLED									//STEEL WINDMILL // // //	4106
36A01	SECTION 36	D23	SHALLOW					1962 COE	1956 USGS INVENTORY	1946 BSA DRAWING	1942 APPRAISALS	//8' DEMPSTER 30' STEEL WINDMILL, 818 CEMENT TANK //filled //1962 COE //UNABLE TO LOCATE 1962 BSA REPORTED RAZED & FILLED	5206
36A02	D24	D24										//WINDMILL, 10X10 CEMENT PUMP HS //filled //1962 COE //UNABLE TO LOCATE 1962 BSA REPORTED RAZED & FILLED //MAY BE WINDMILL // // //	
36AAA	D24												



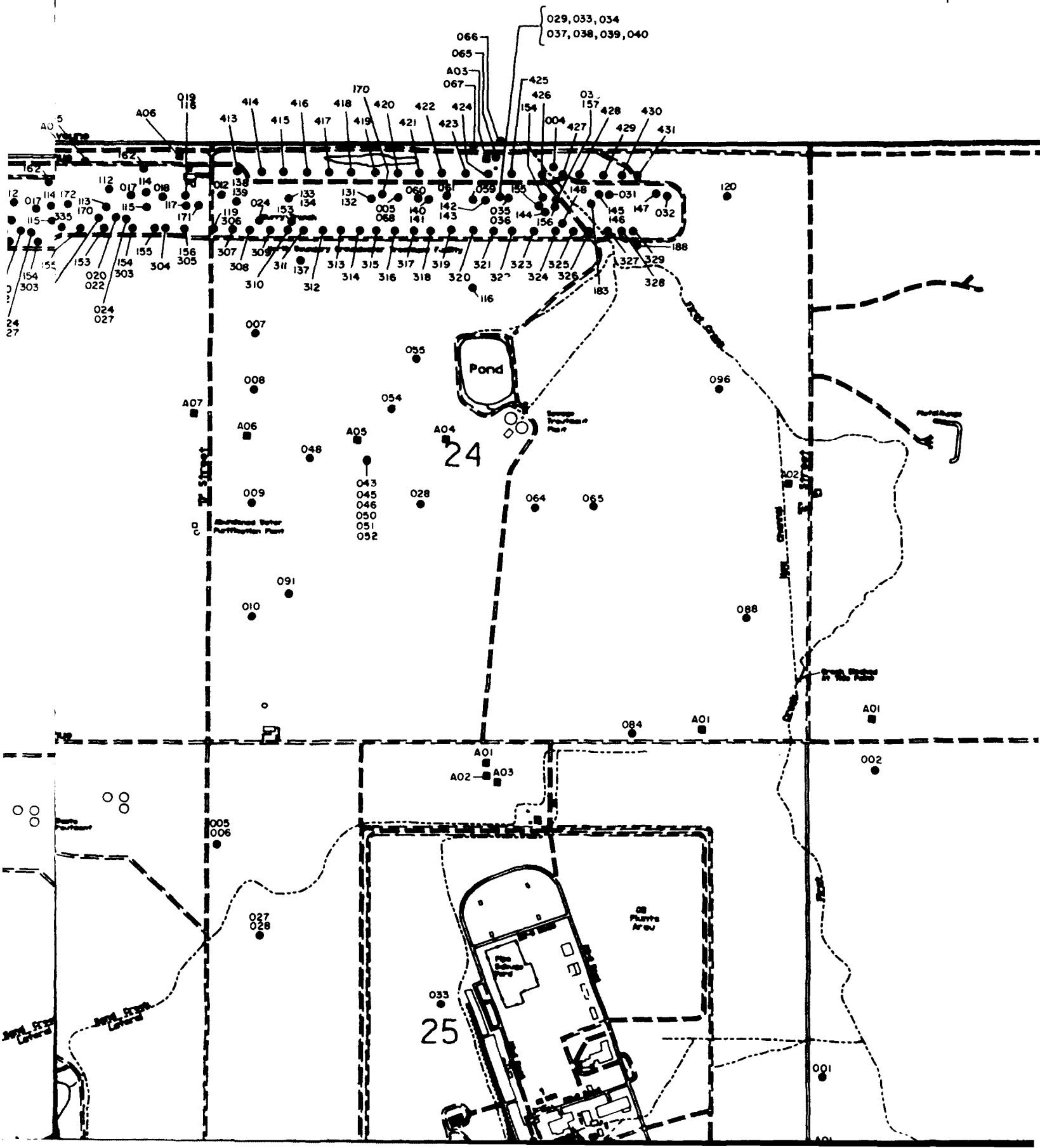
2175

2175000

2180000



2190000



295000

East 15th Avenue

Tenth Avenue

7th Street

Arrows indicate

10th Avenue

7th Street

9

19

20

30

30

29



2250000

2200000

East 35th Avenue
Tenth Avenue

Y Street



Arroyo Road, N

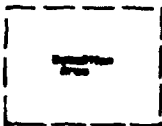
20

Y Street
Buckley Road

195000

10th Avenue

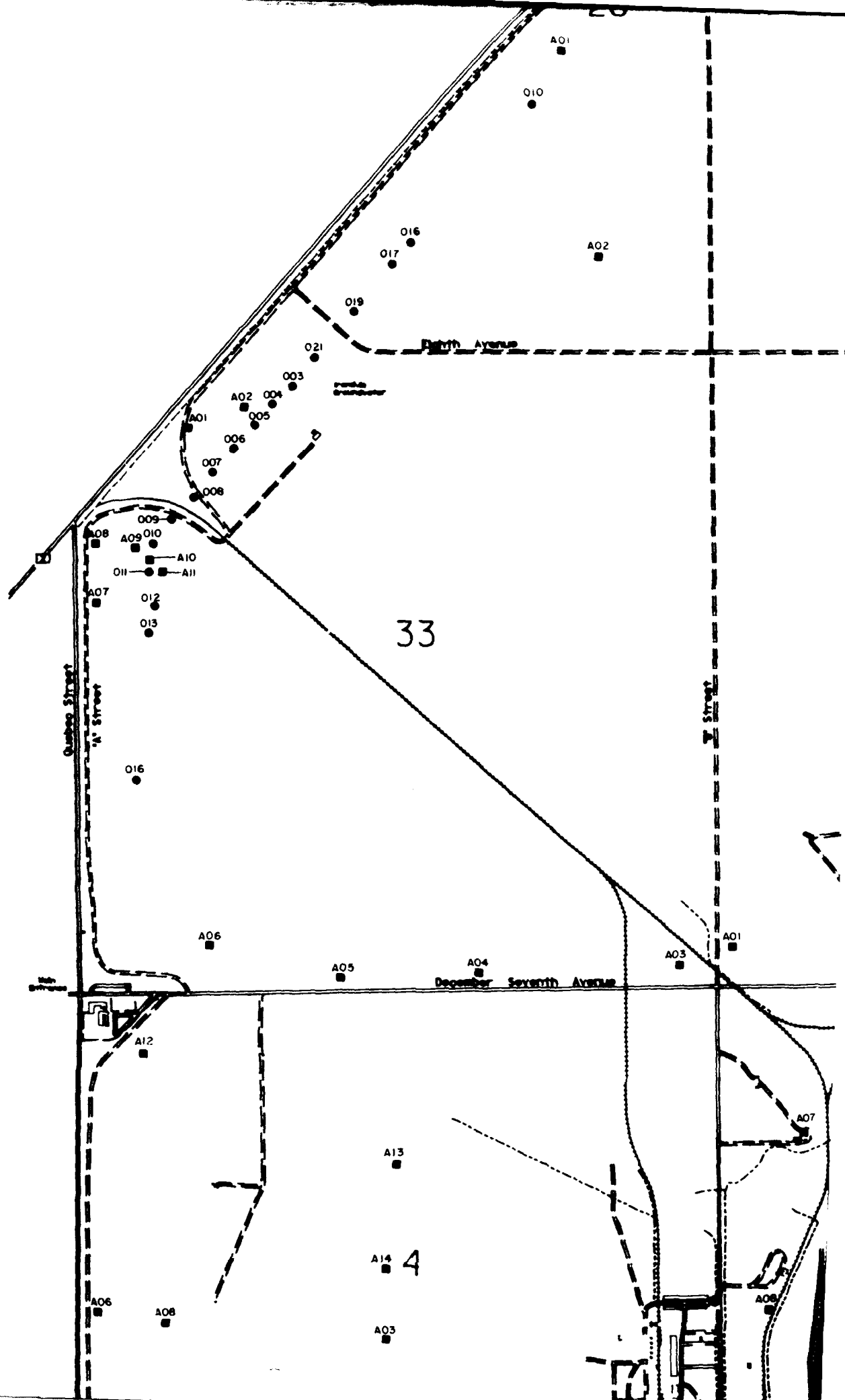
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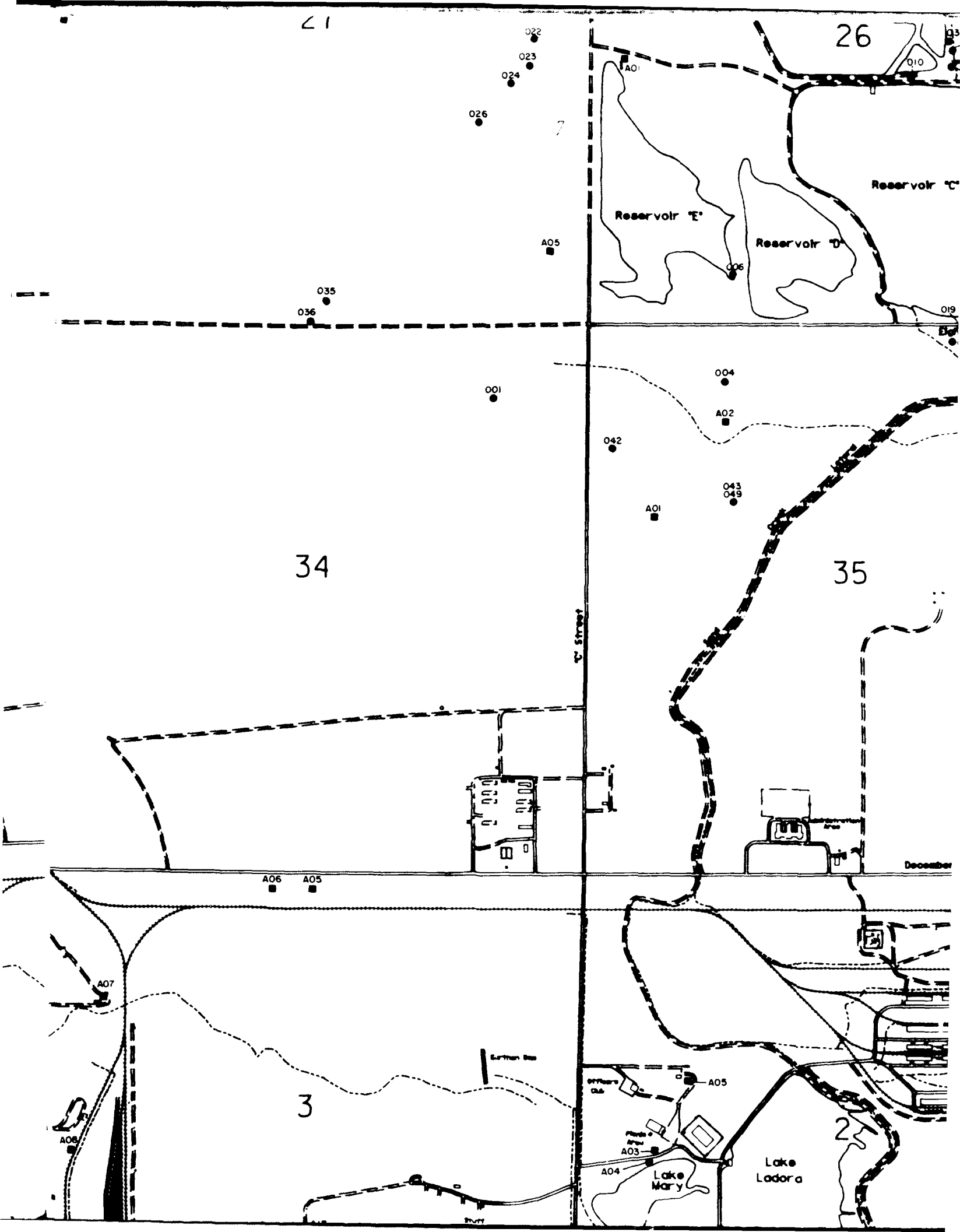


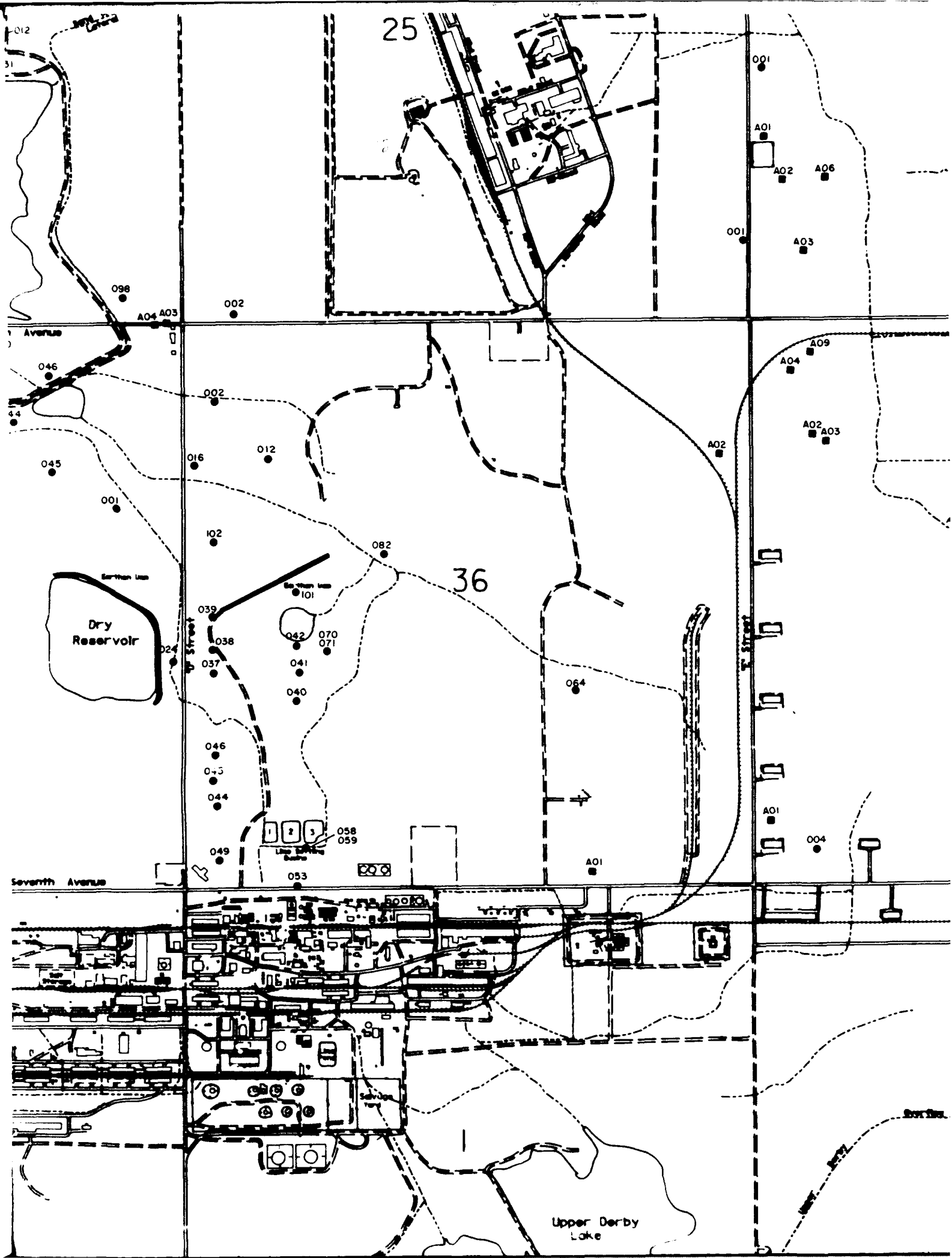
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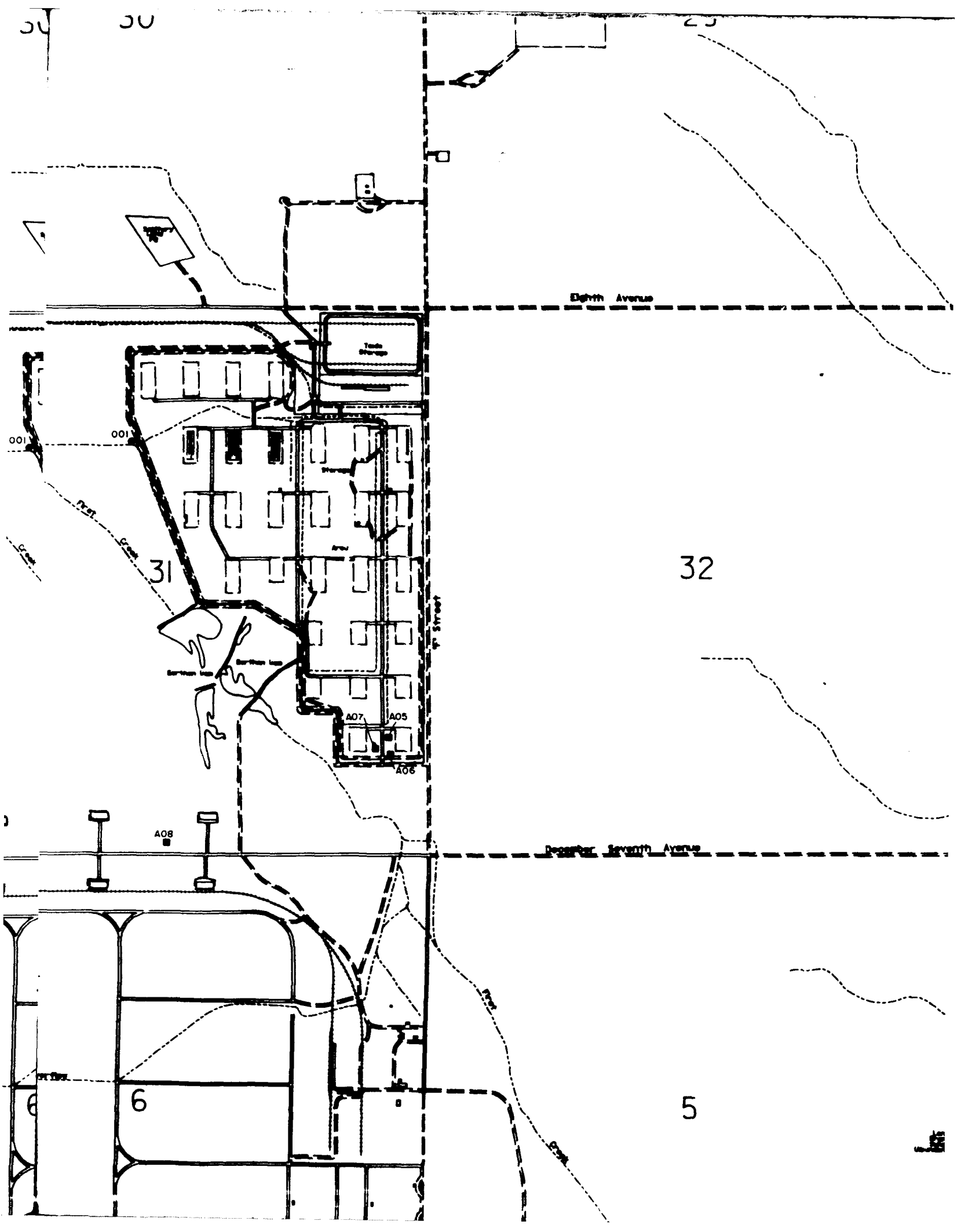
185000

180000









Buddy Road

W Street

W Street

Buddy Road

Eighth Avenue

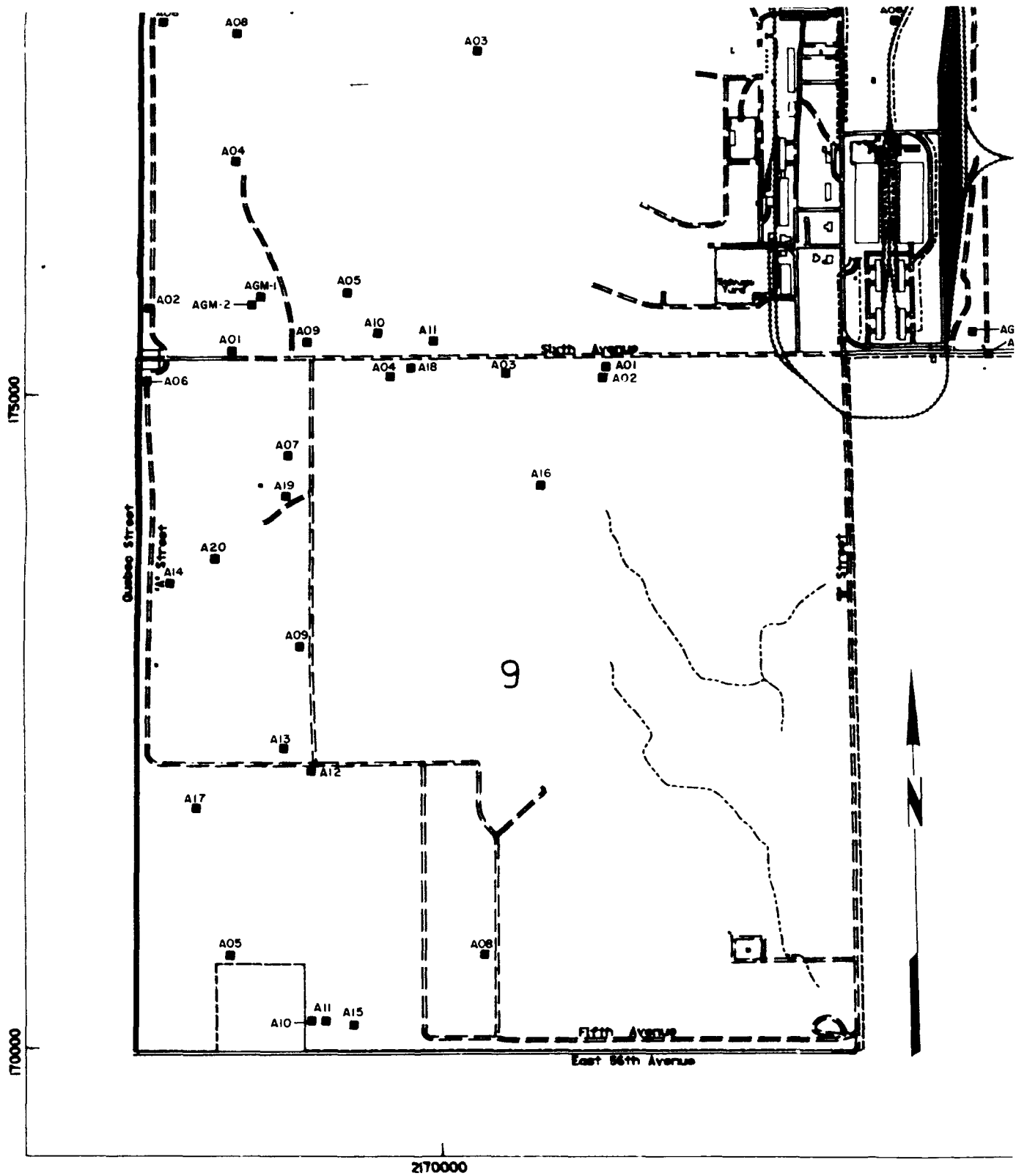
Seventh Avenue

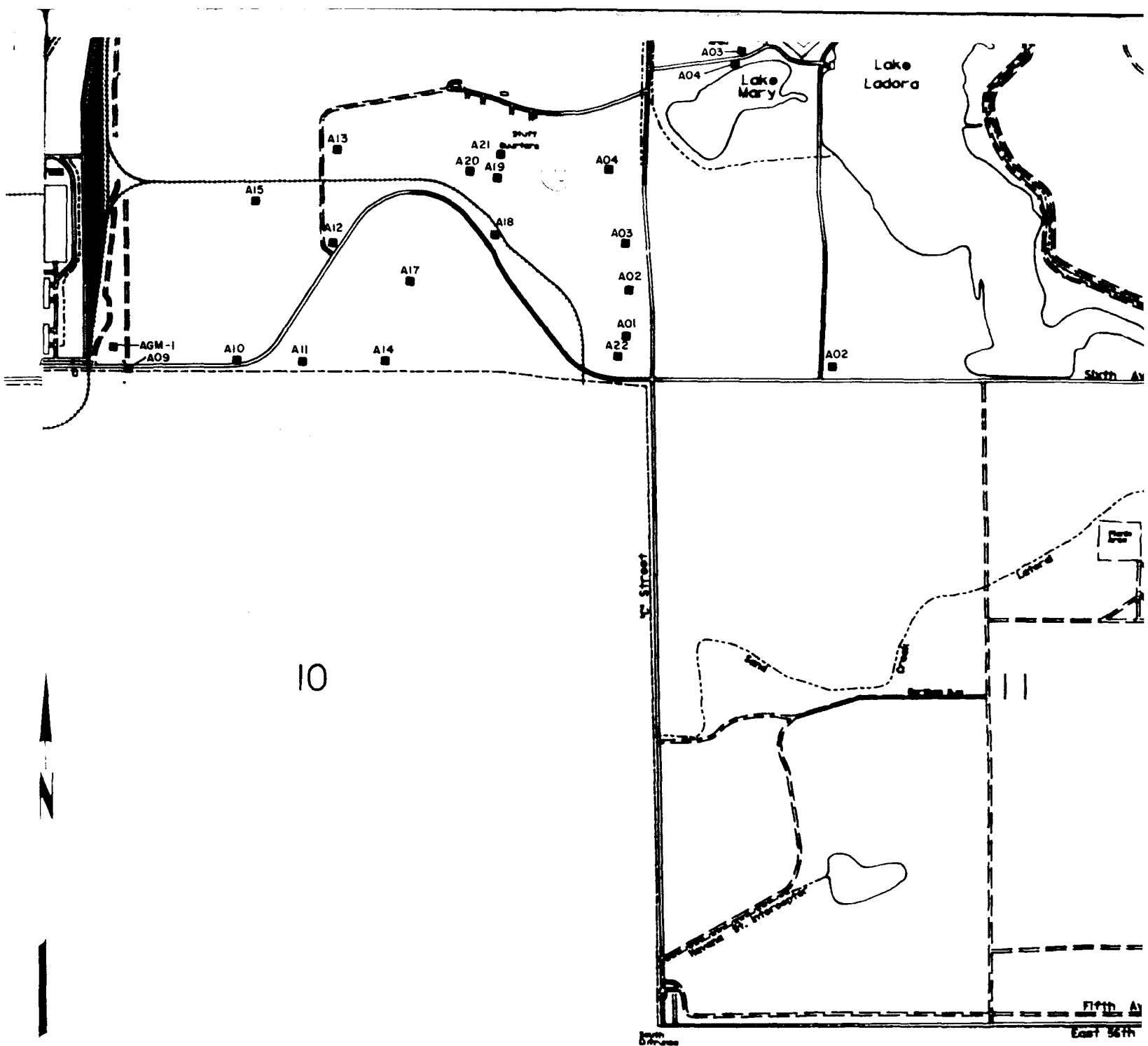
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185000

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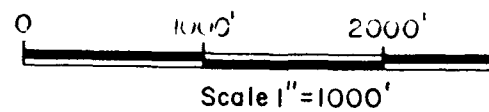


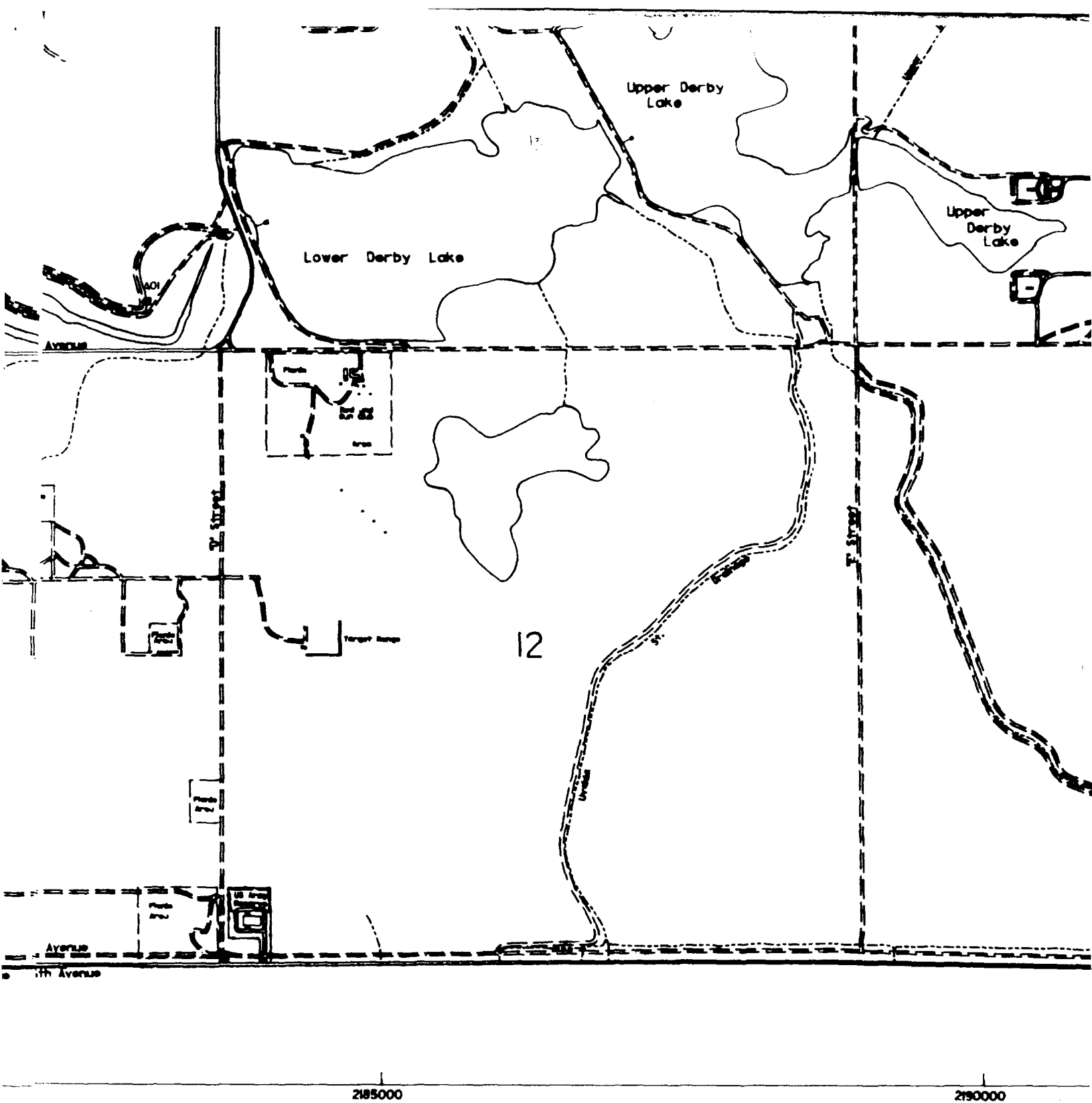
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2180000

EXPLANATION

- A05
 ■ Pre - 1942 Wells
 ● Post - 1942 Wells



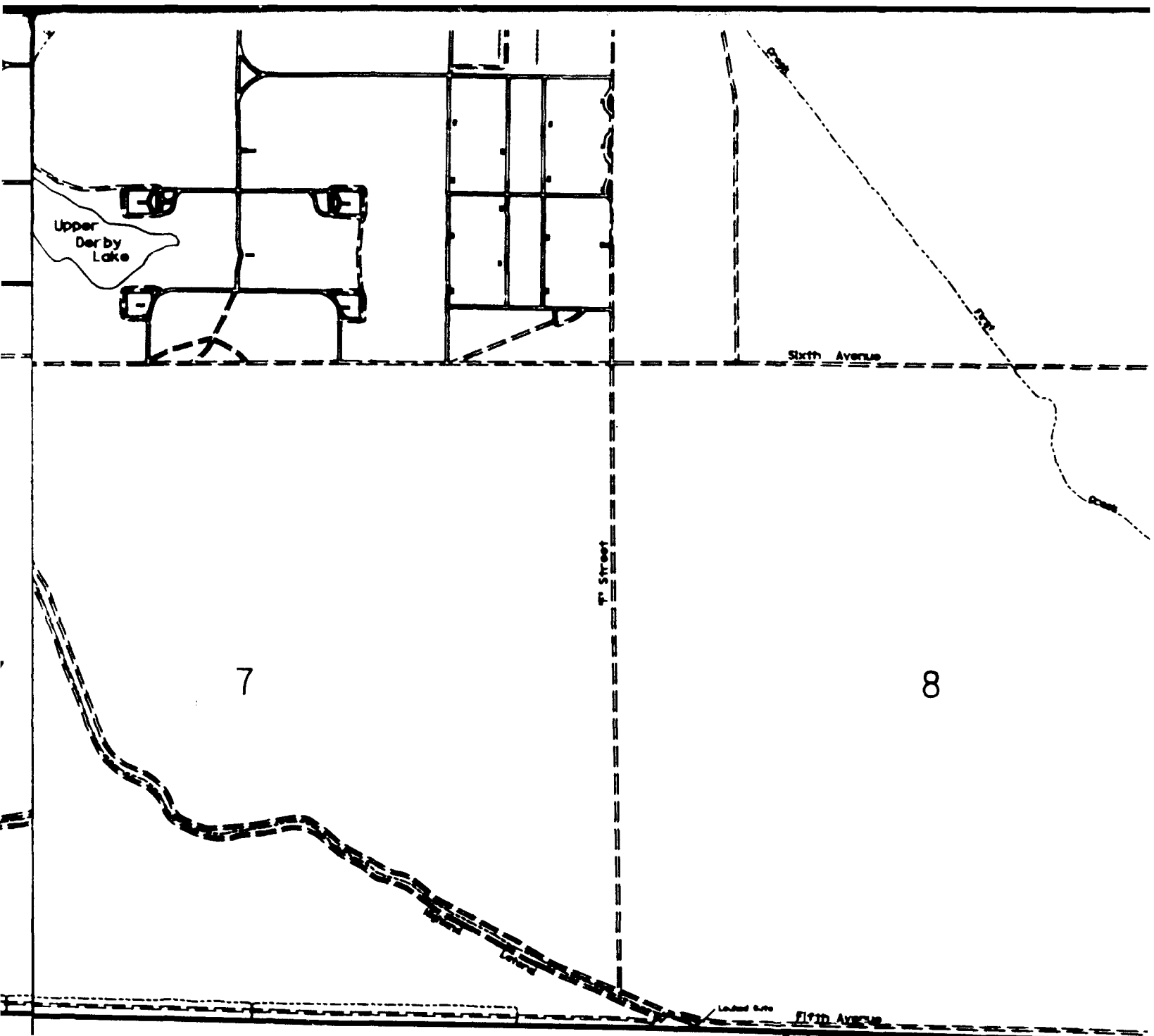


2185000

2190000

3000'

Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland



270000

195000

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28

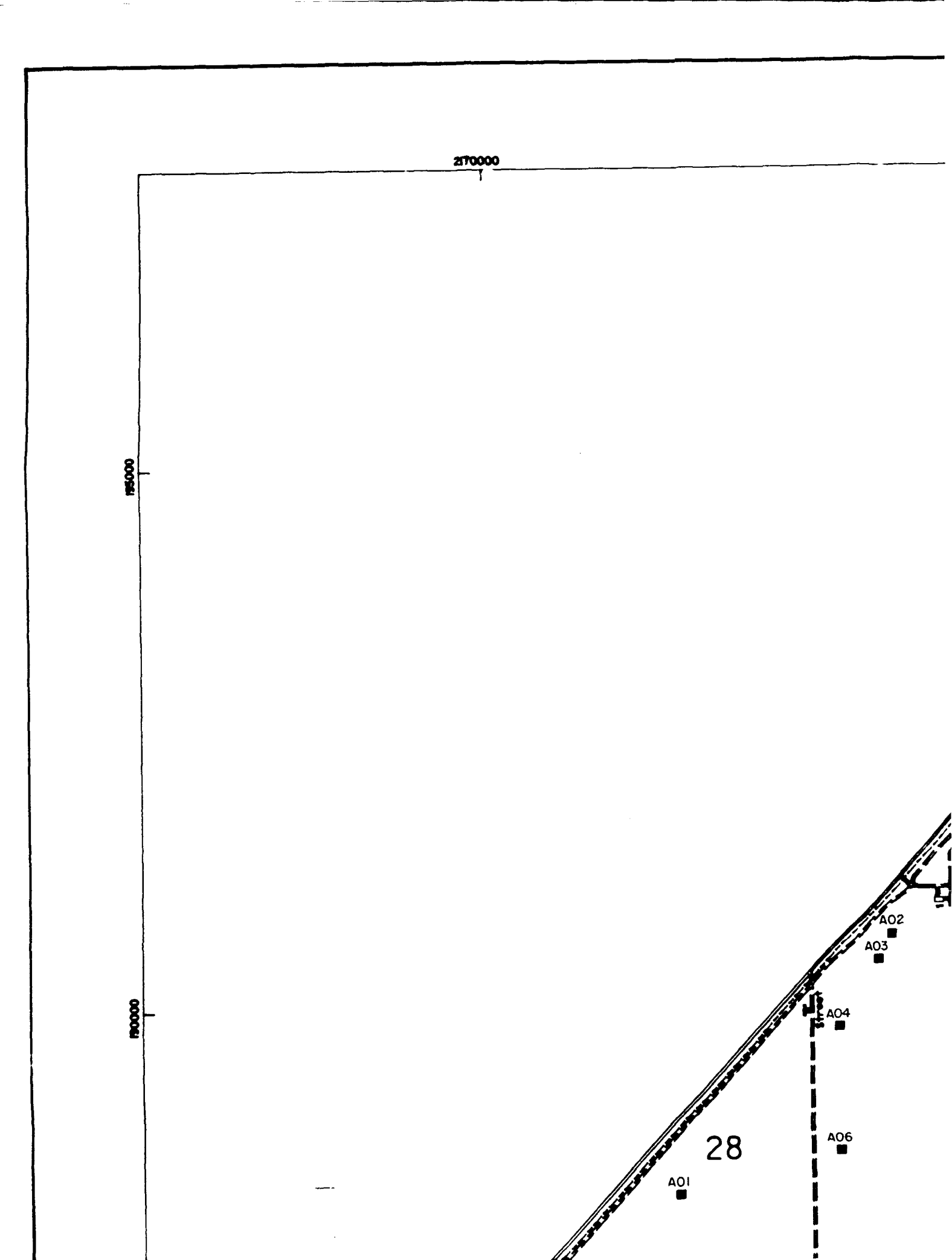
A01

A06

A04

A03

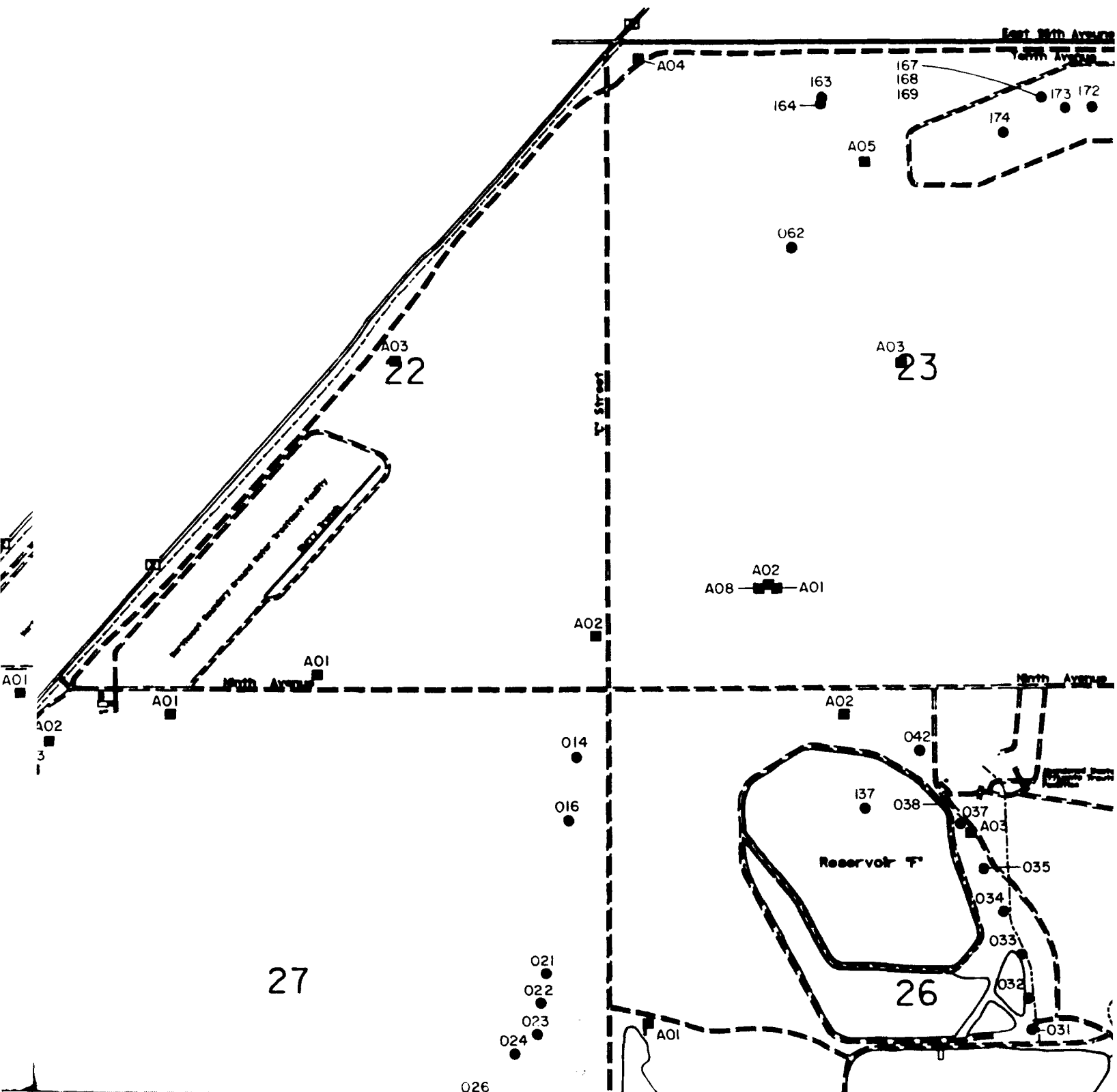
A02



217

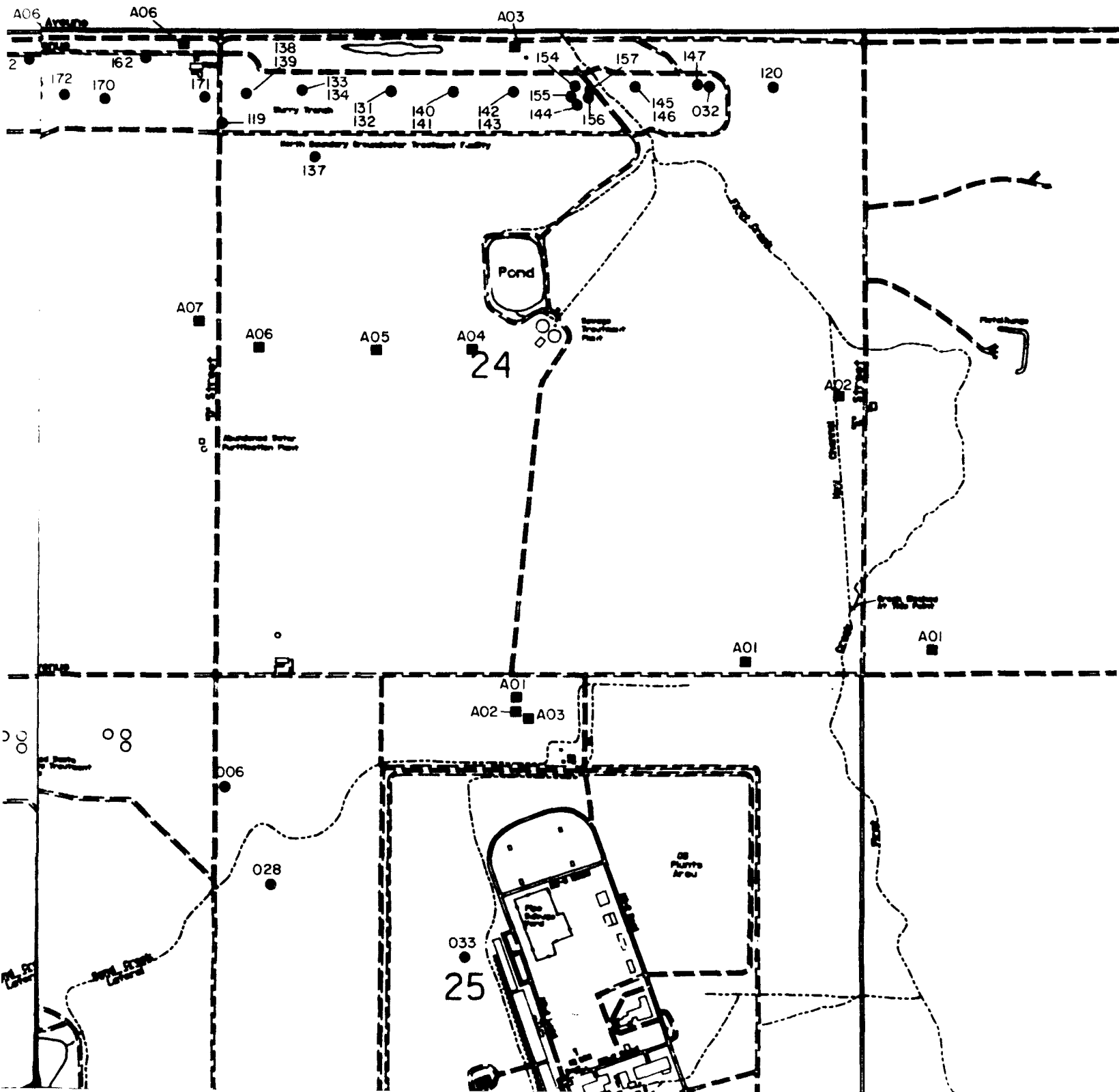
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2180000



285000

290000



2995000

East 35th Avenue

Tenth Avenue

9th Street

Phone booth

10th Avenue

9th Street

9

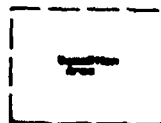
19

20

0

30

29



2185000

2200000

East 55th Avenue
Yerth Avenue

20

W Street

Artificial Pond/Reservoir

W Street

Burkley Road

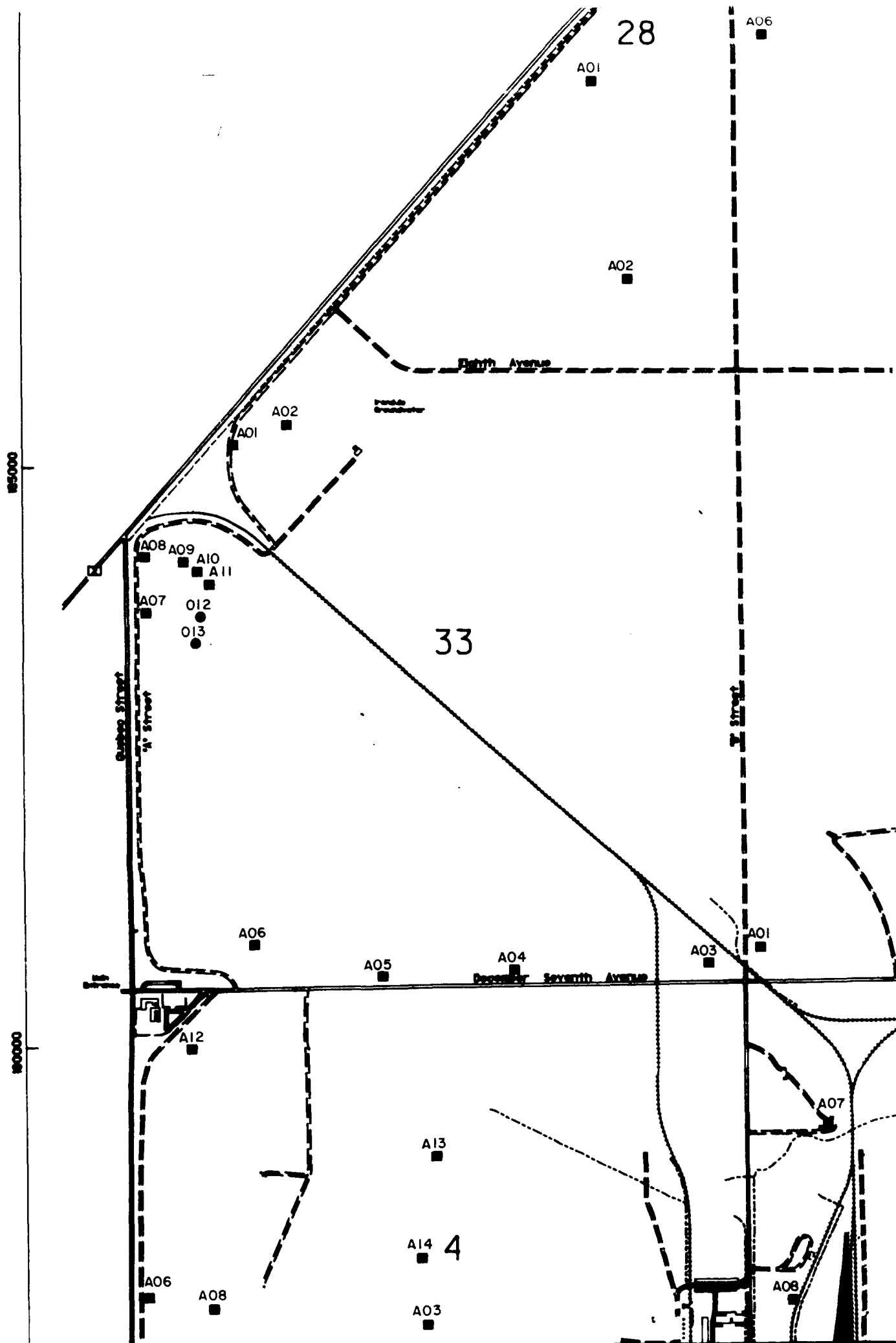
187th Avenue

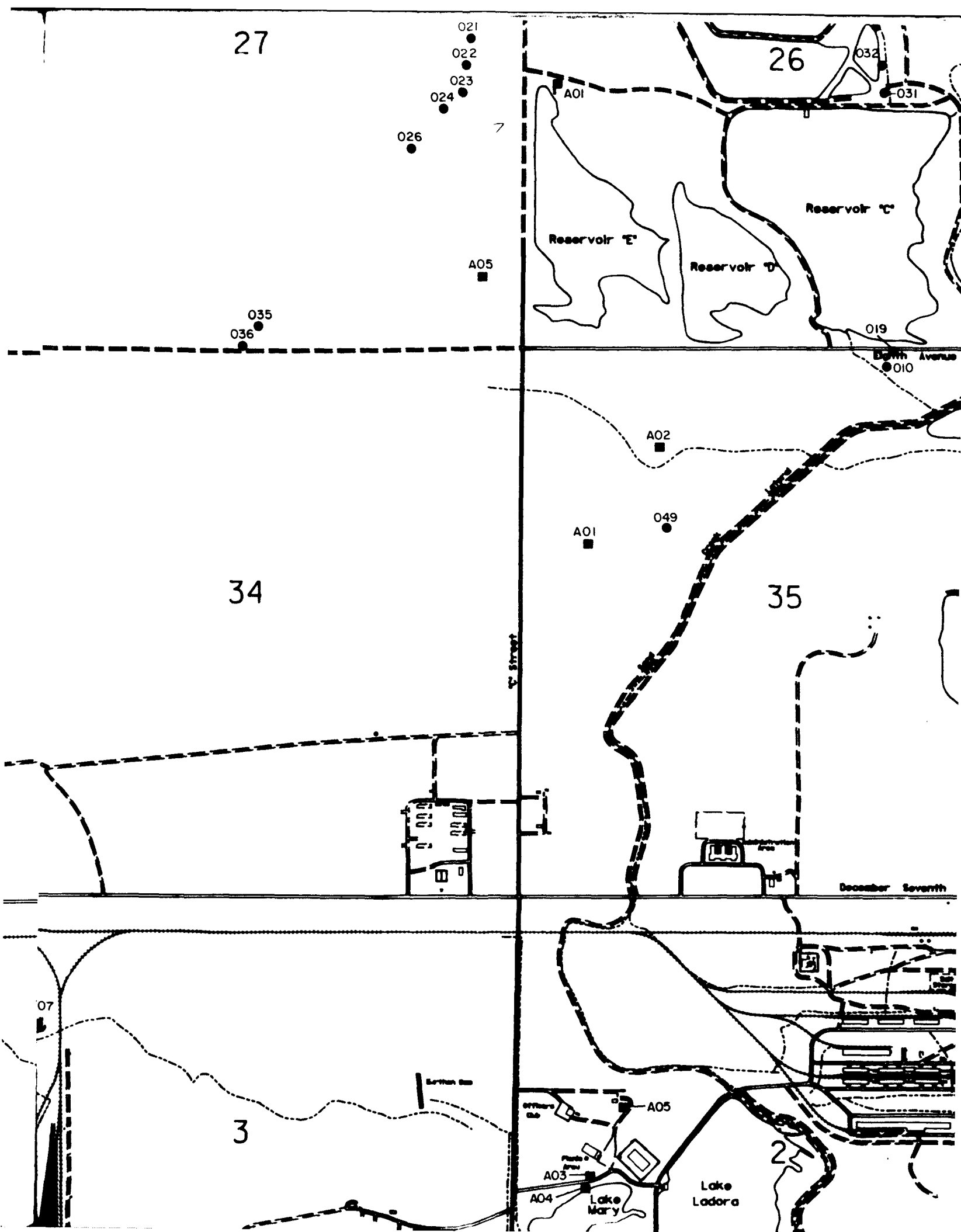
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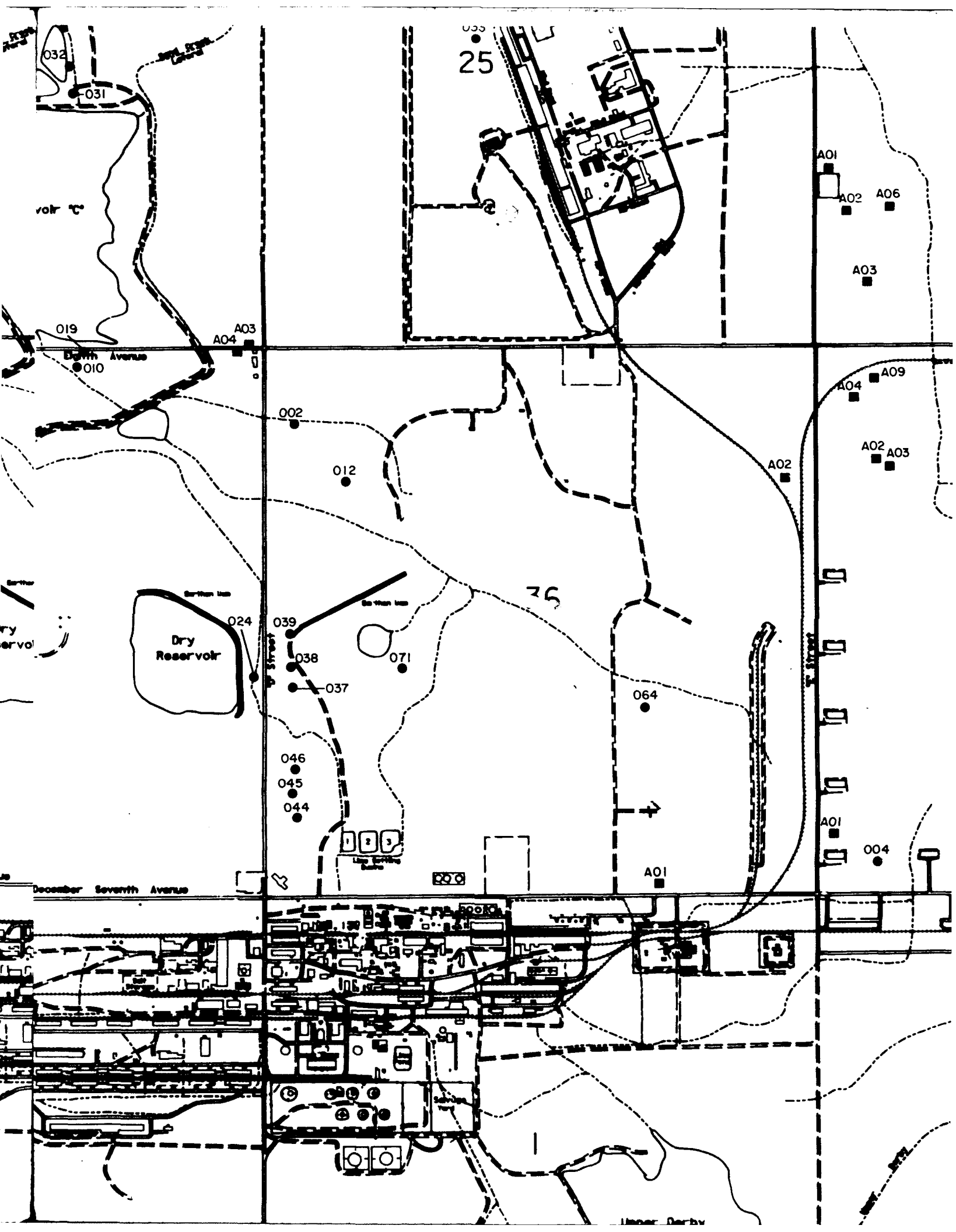
190000

29

187th Avenue







30

29

A06

03

A09

A02

A03

Eightth Avenue

31

32

A07

A05

A06

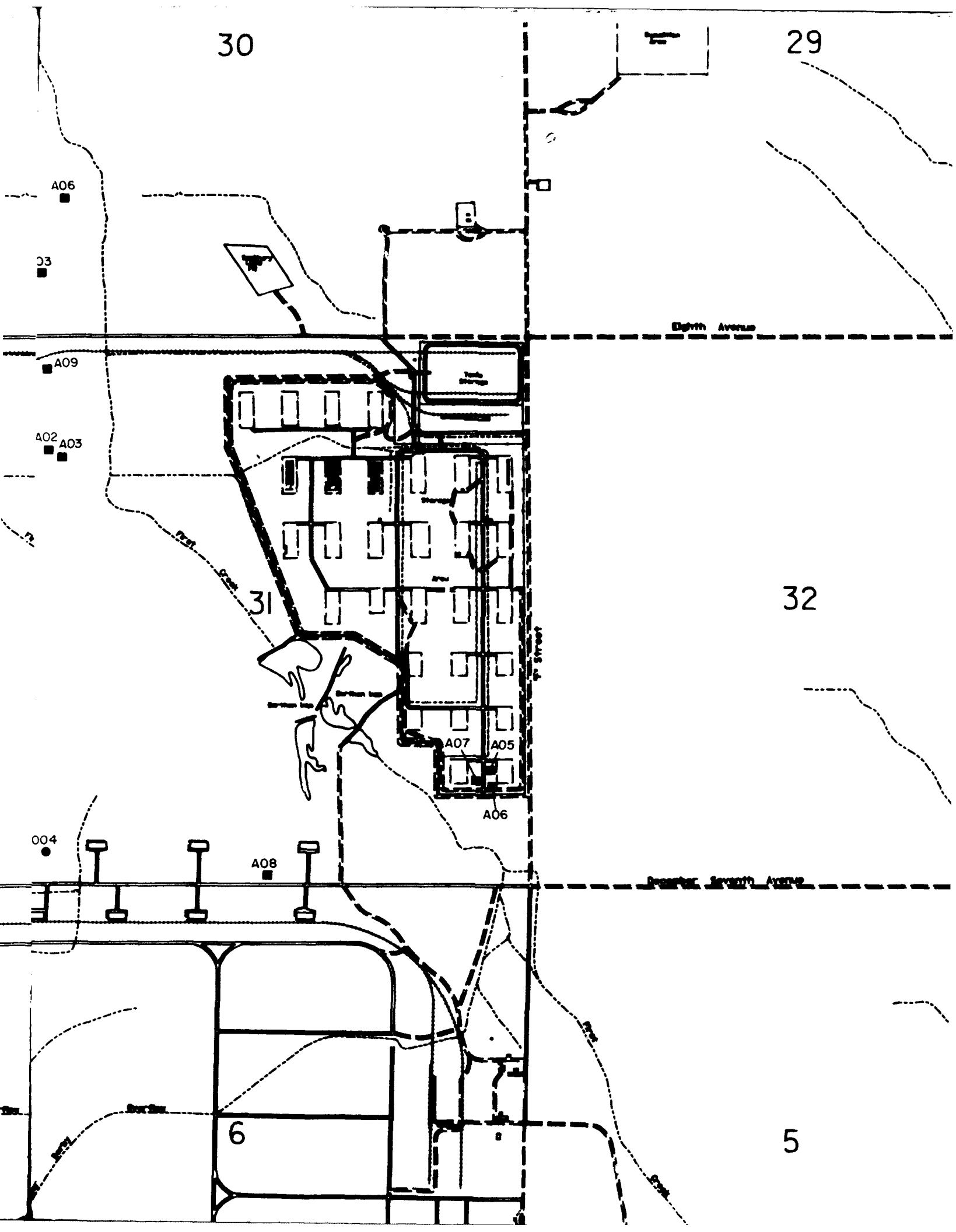
004

A08

Decker Seventh Avenue

6

5



29

Eighth Avenue

32

Seventh Avenue

5

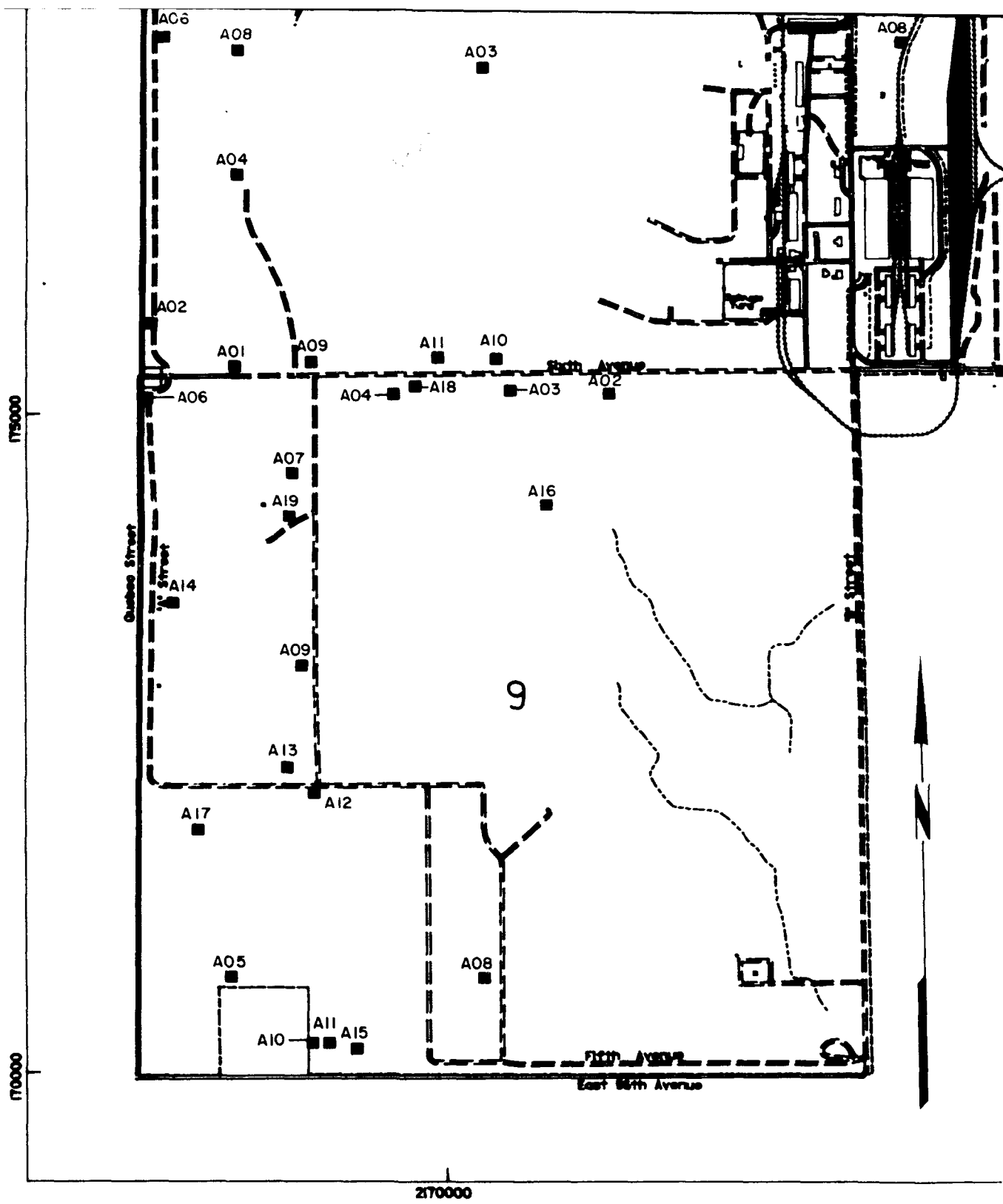
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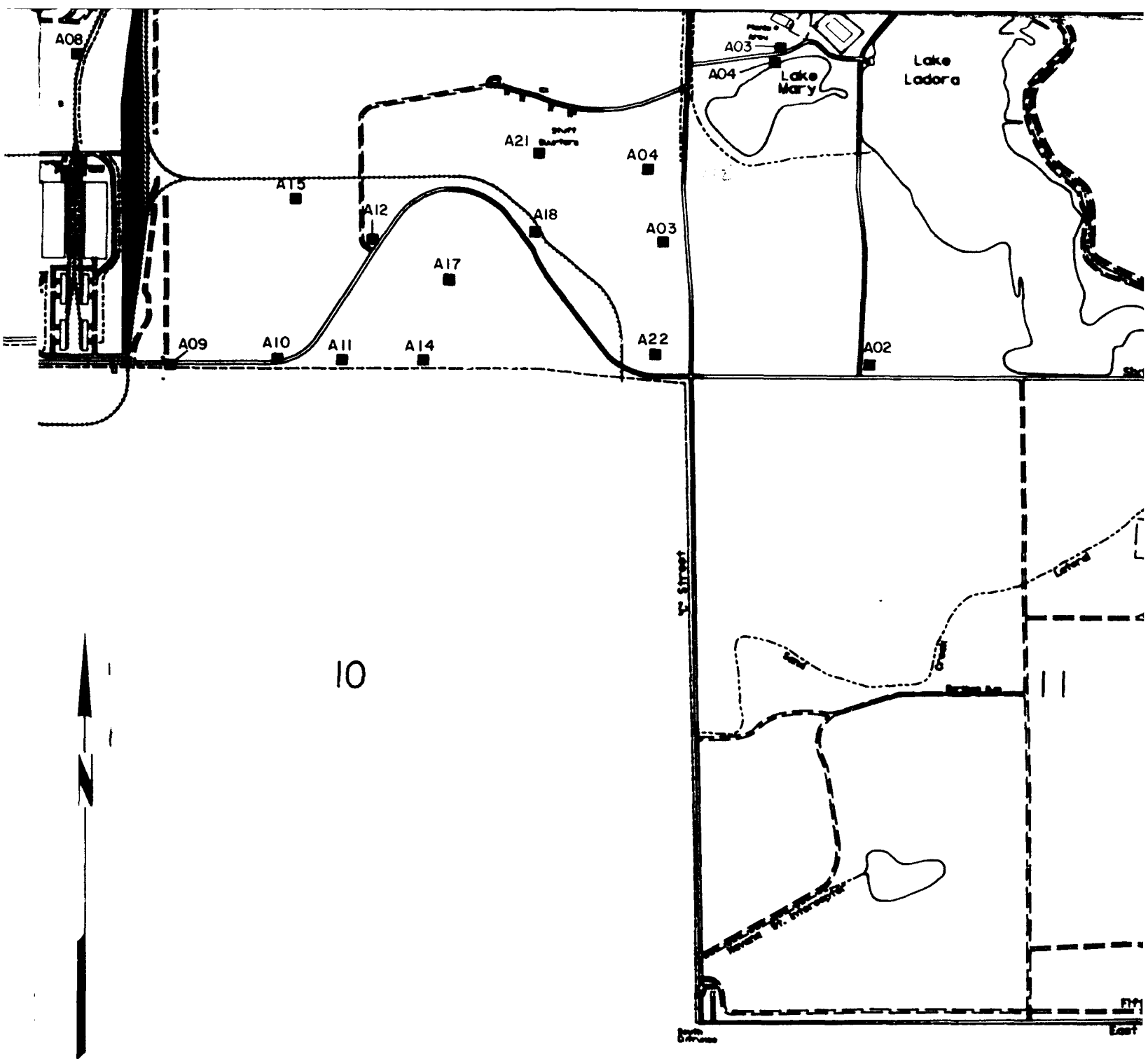
180000

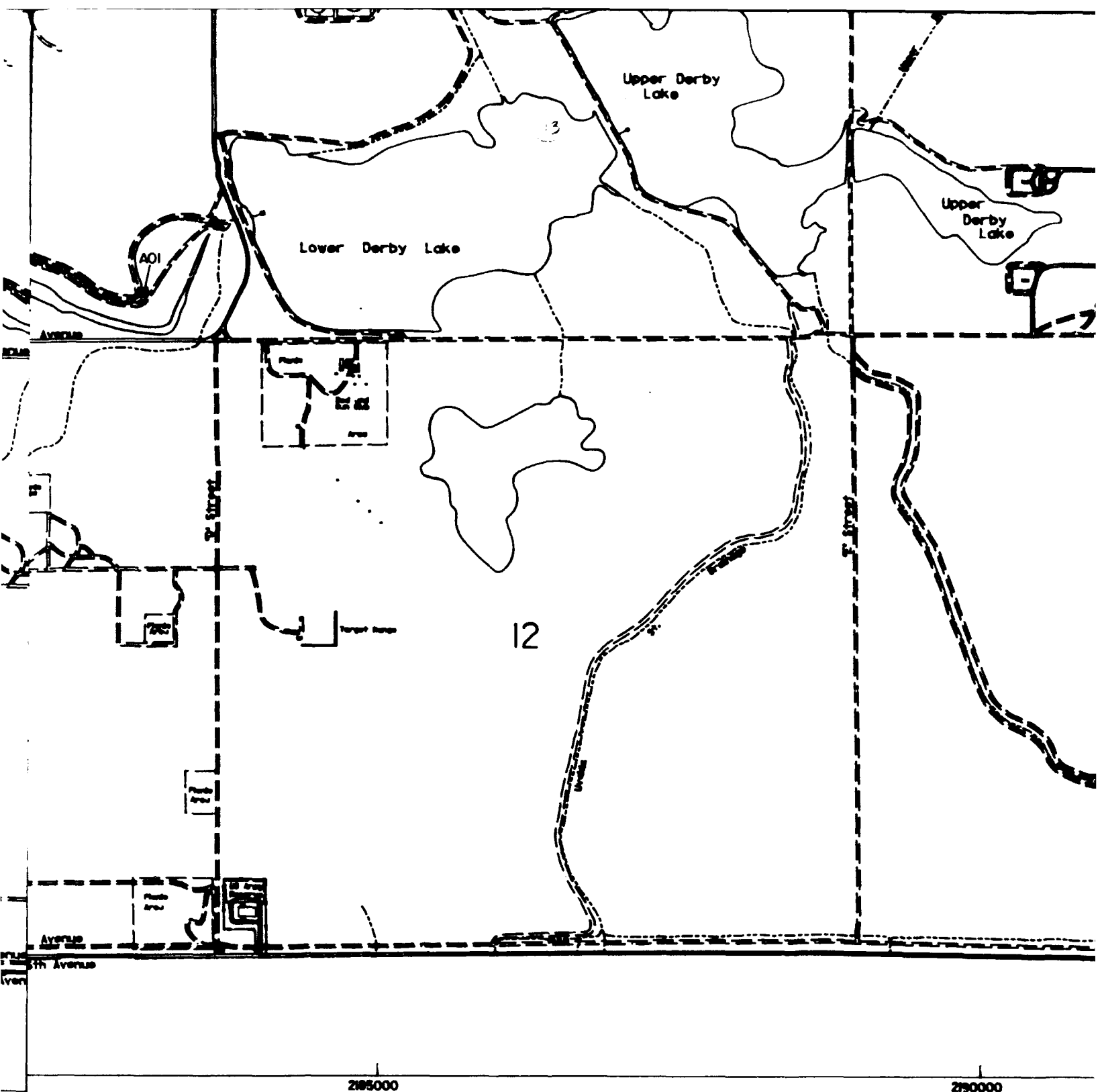
Y Street
Budday Road

AO5

AO6







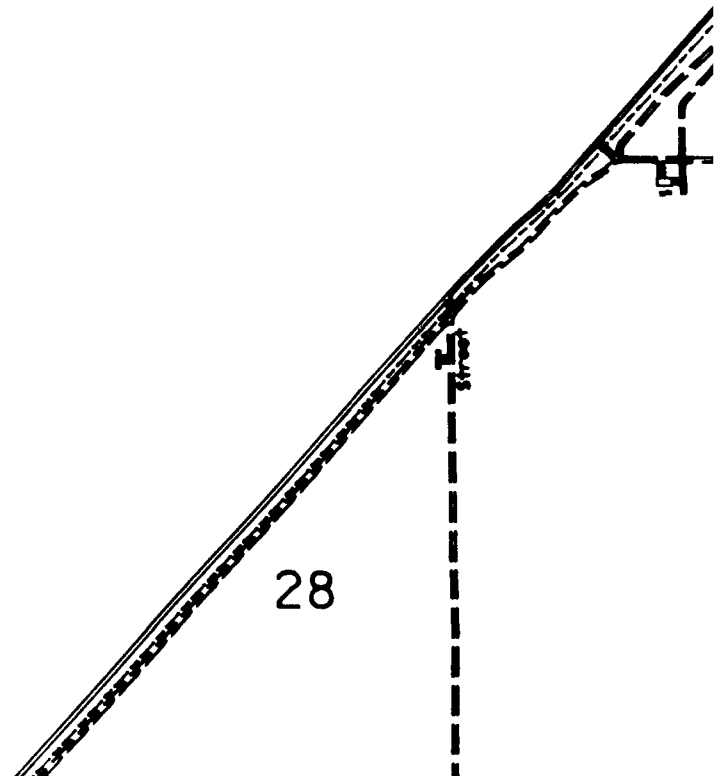
Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

195000

270000

190000

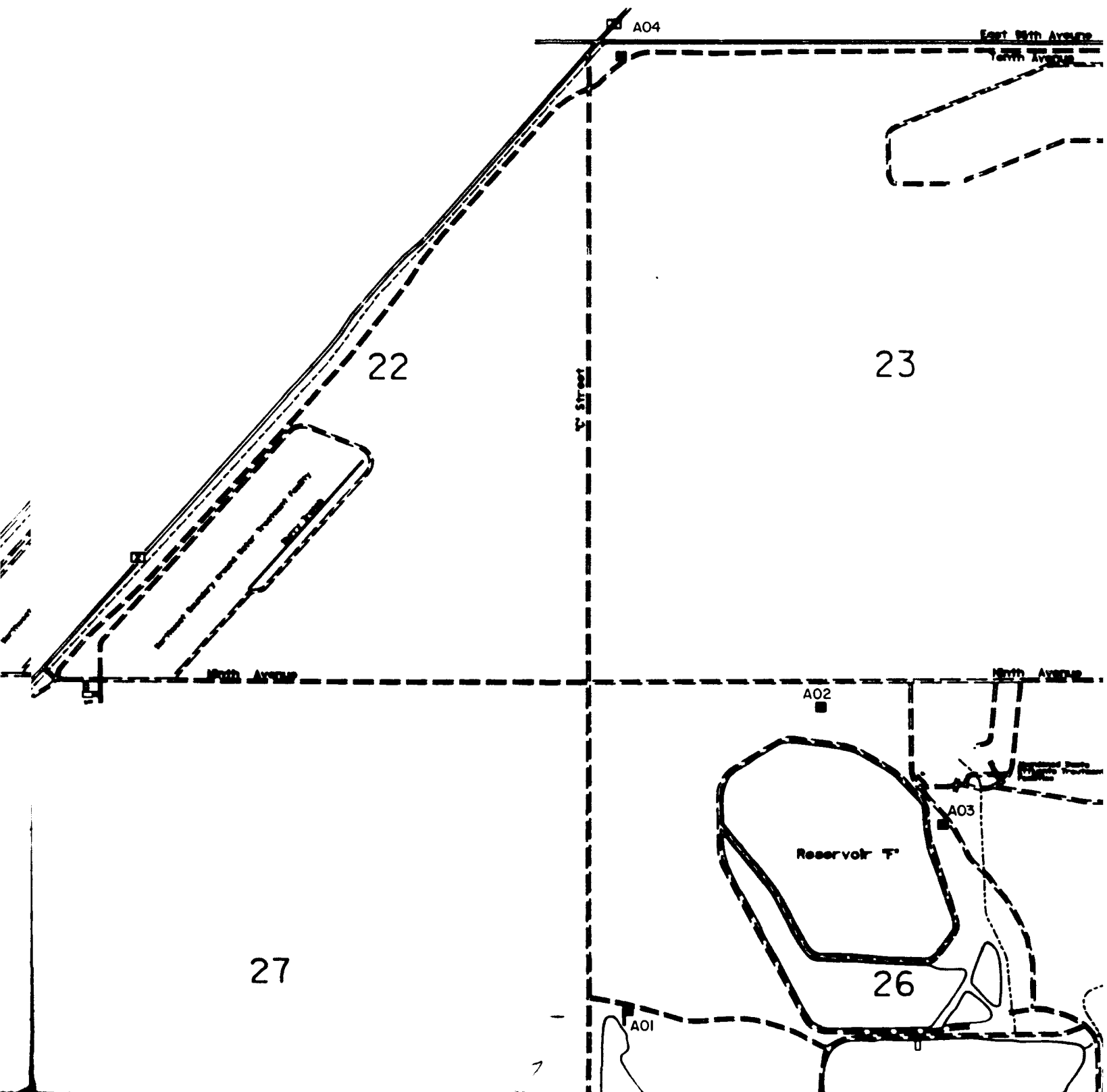
28



2175

2175000

280000



285000

290000

A06

Berry Trench

North Boundary Groundwater Treatment Facility

Pond

24

A06

Abandoned Water
Purification Plant

A02

MS Control

1000' 750'

A01
A02
A03

Oil
Pumping
Area

25

2795000

East 25th Avenue
Tenth Avenue

19

20

9th Street

Armed Forces

9th Street

Bushy Road

10th Avenue

30

29

11th

2000 2185000 2200000

East 26th Avenue
Tenth Avenue

20

W Street

W Street

Buckley Road

195000

190000

2100 190000

29



28

Eighty Avenue

33

A07

Quincy Street

4th Street

7 Street

A03

Decker Seventh Avenue

A12

A13

4

850000

860000

27

26

7

A01

Reservoir E

Reservoir D

Reservoir C

Bath

34

35

St Street

December 5th

3

Barren Bay

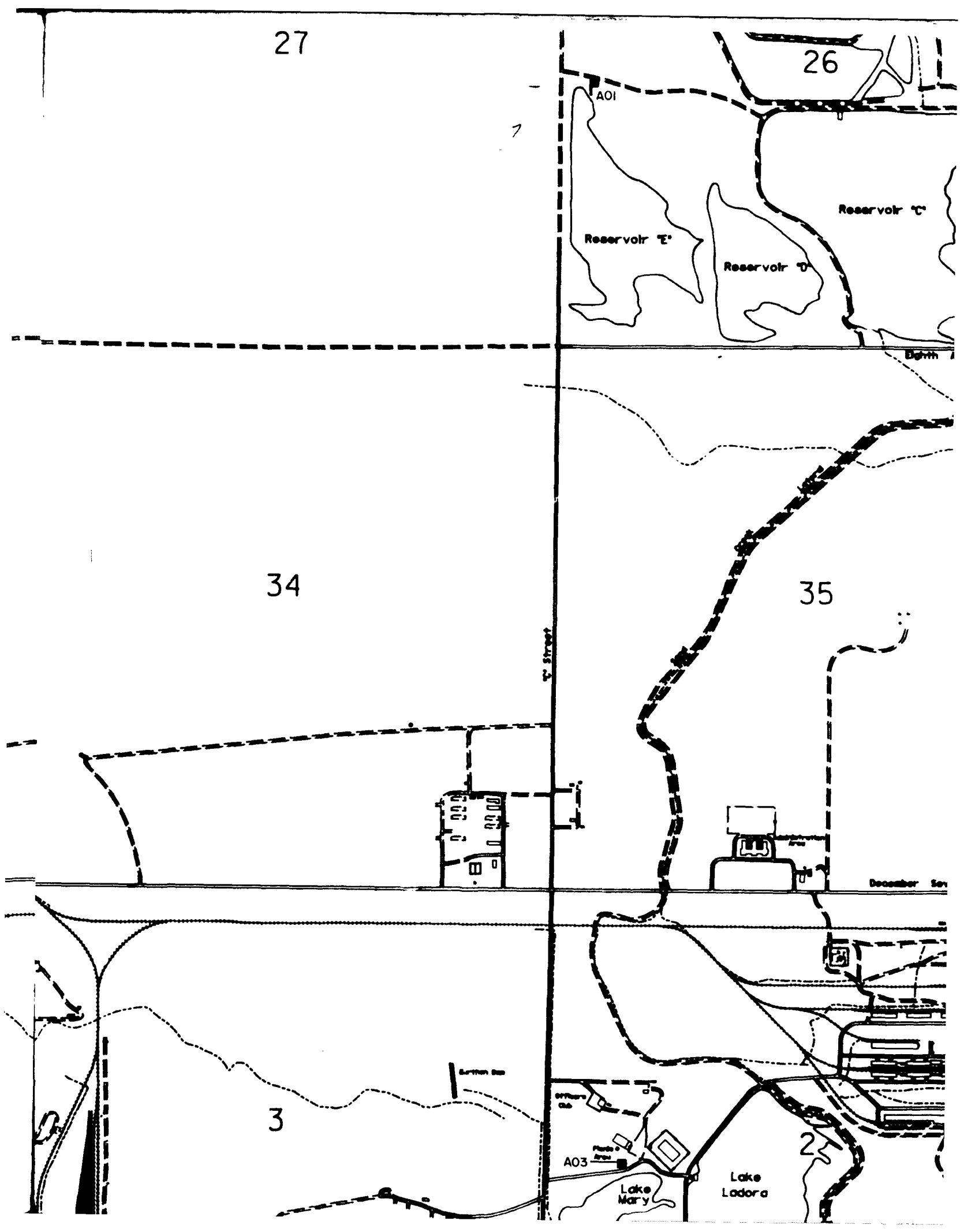
Officer's Quarters

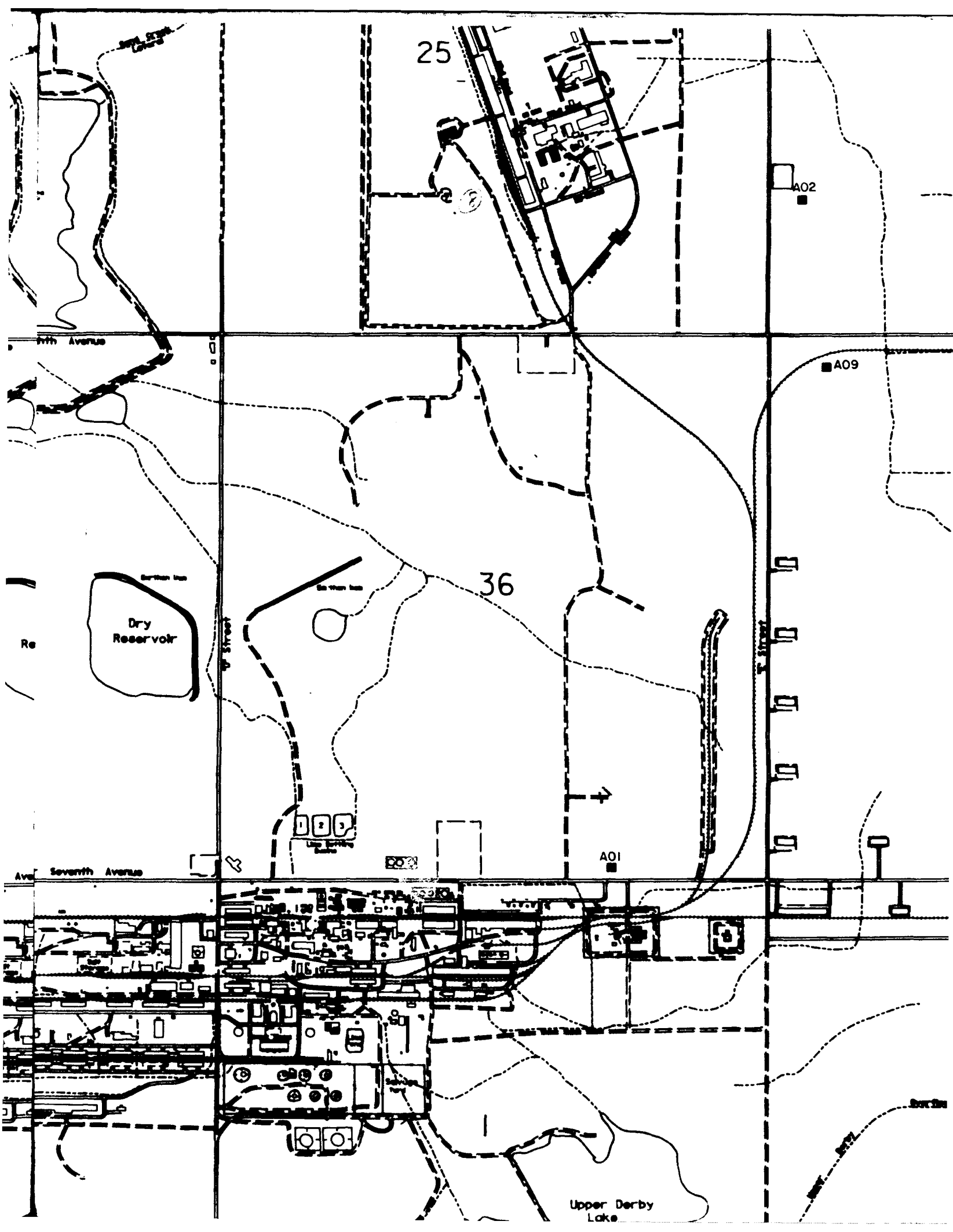
A03

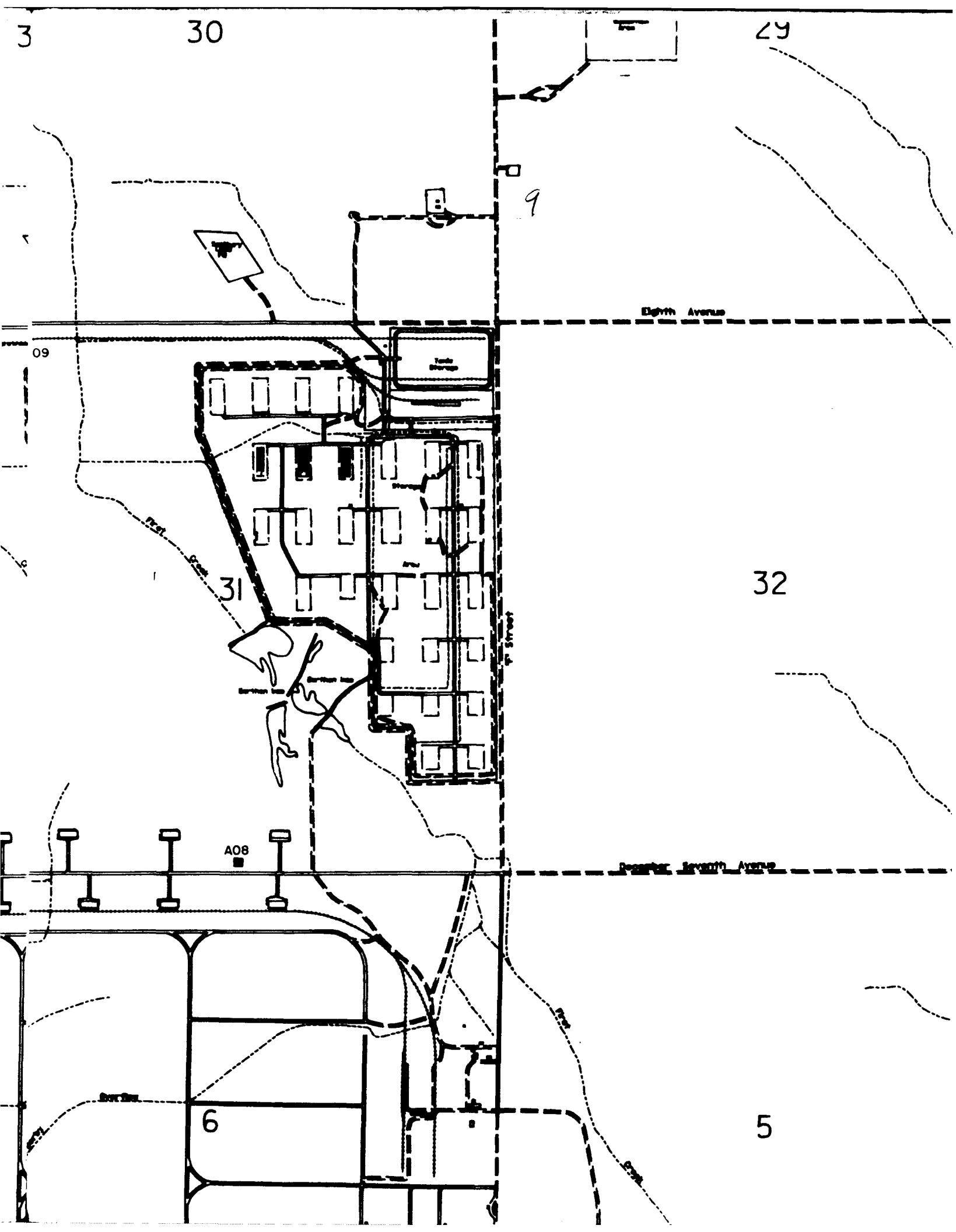
Lake Mary

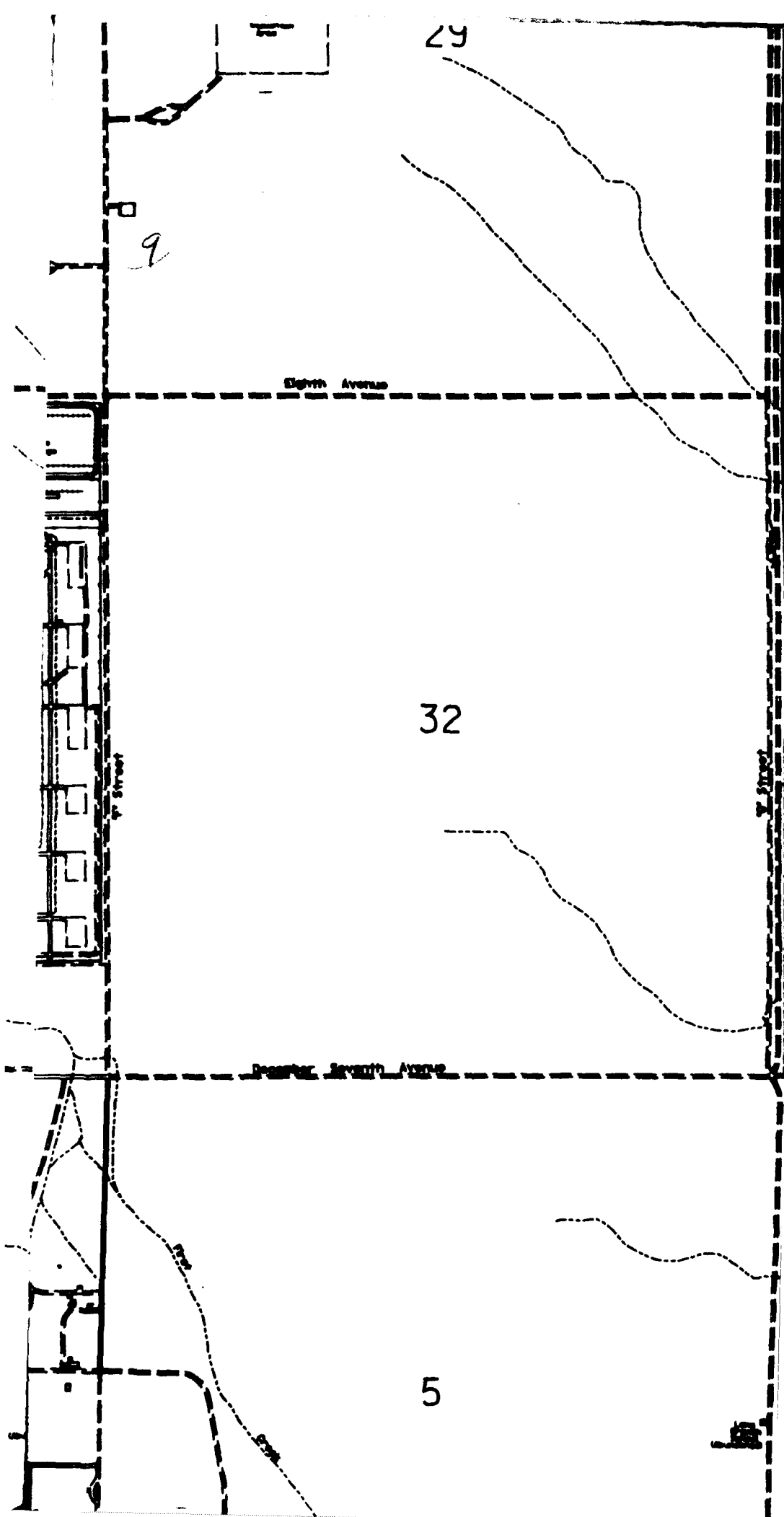
Lake Ladora

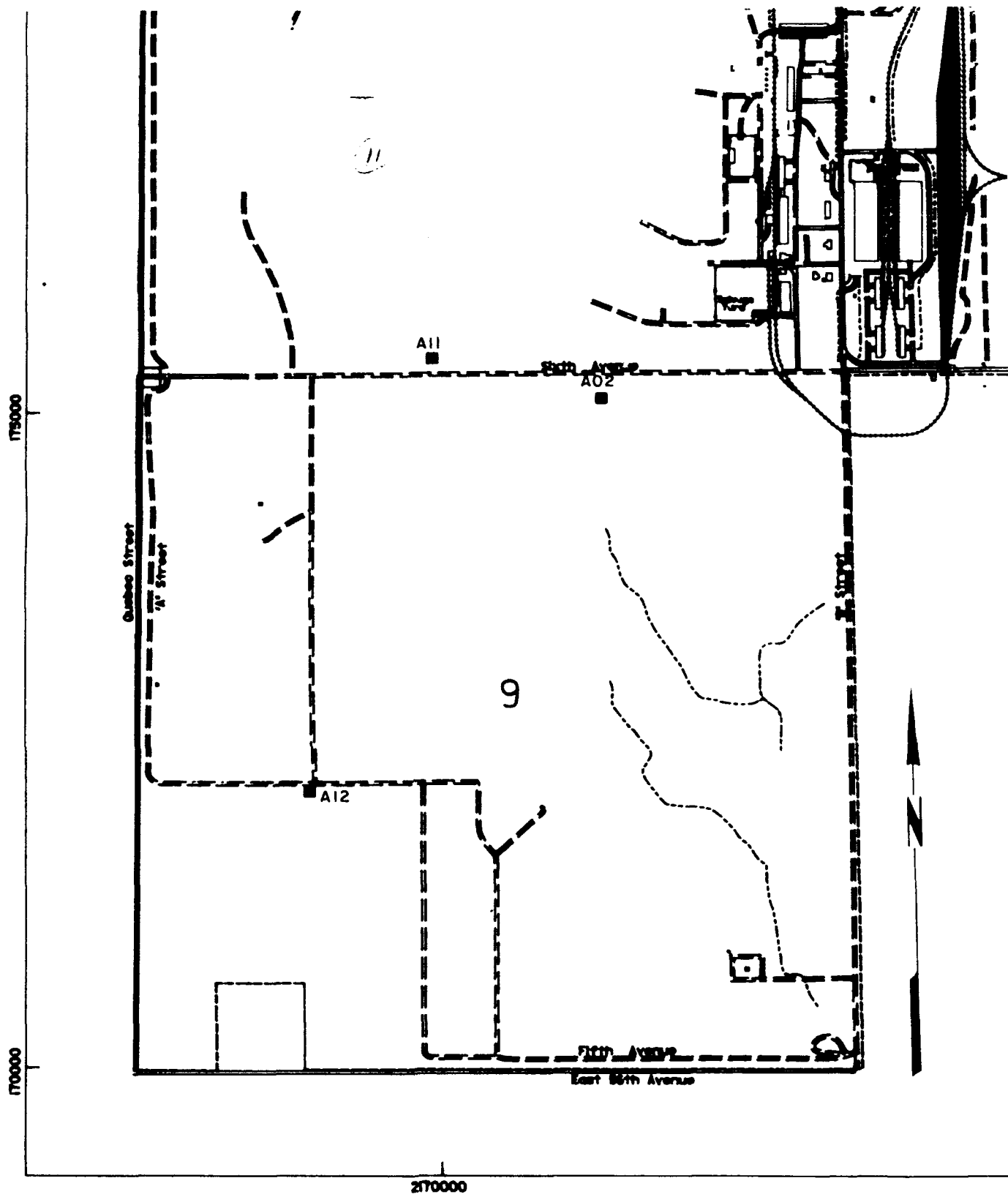
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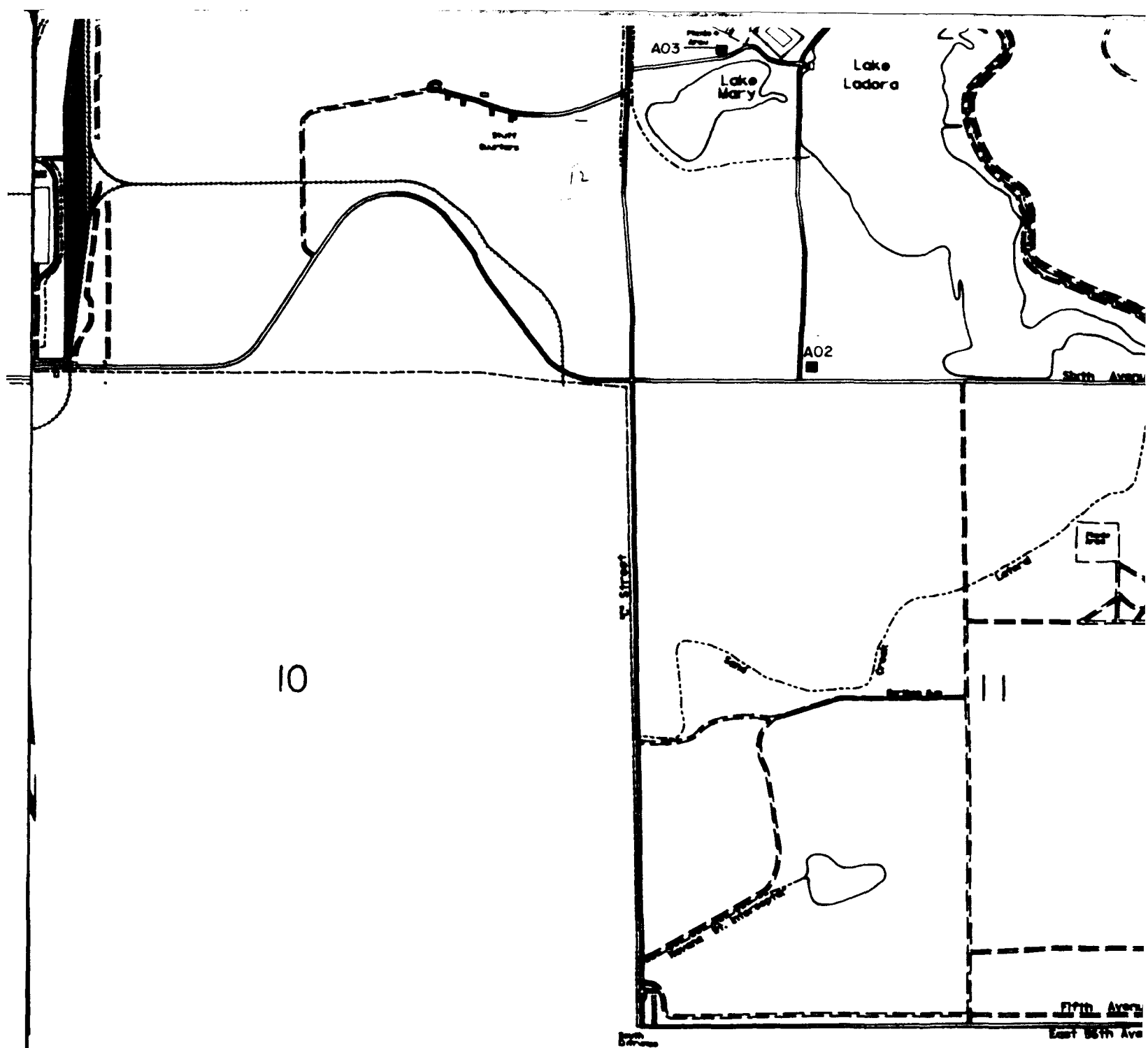








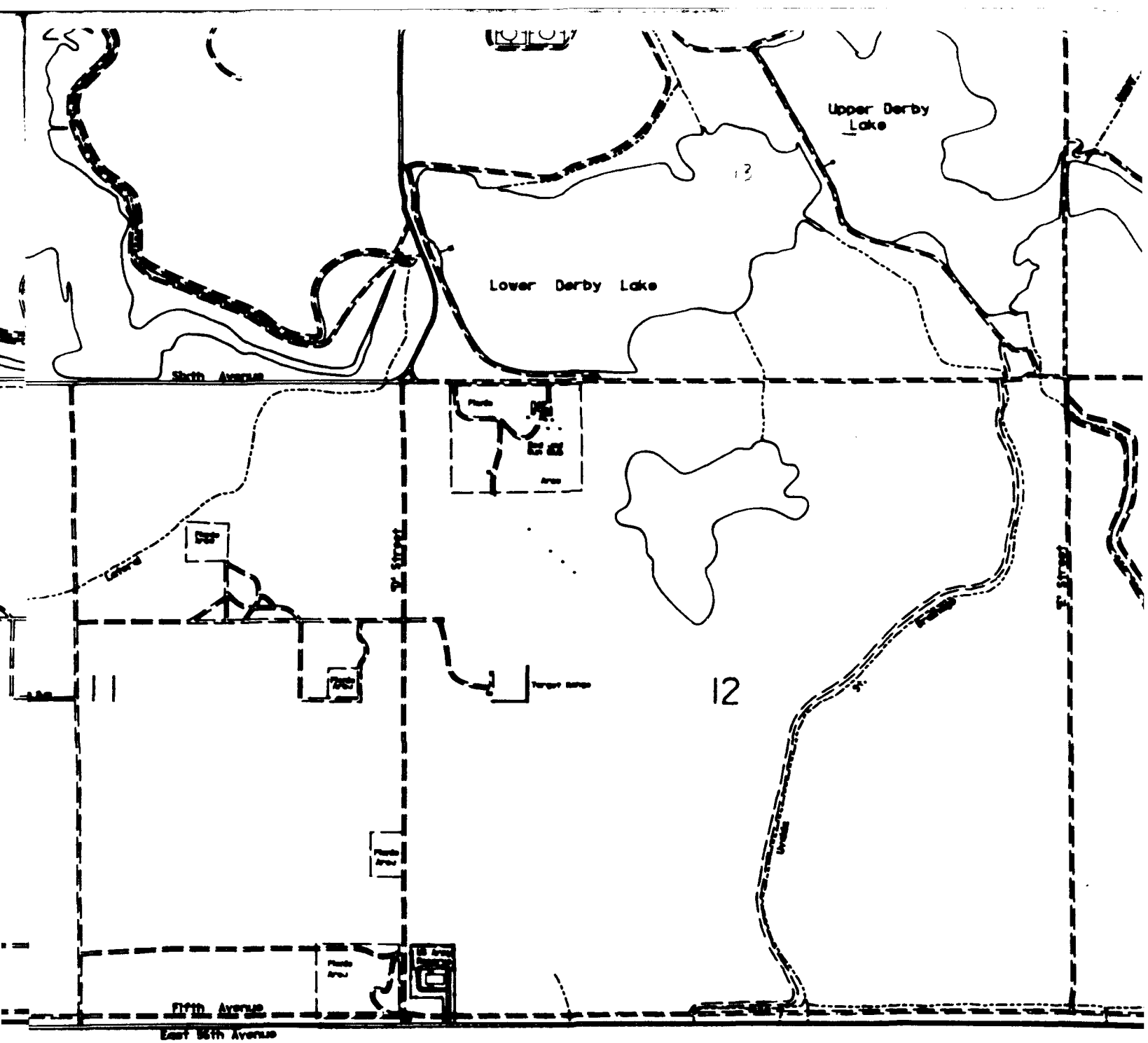




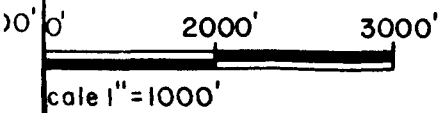
EXPLANATION

A03
■ Pre - 1942 Wells

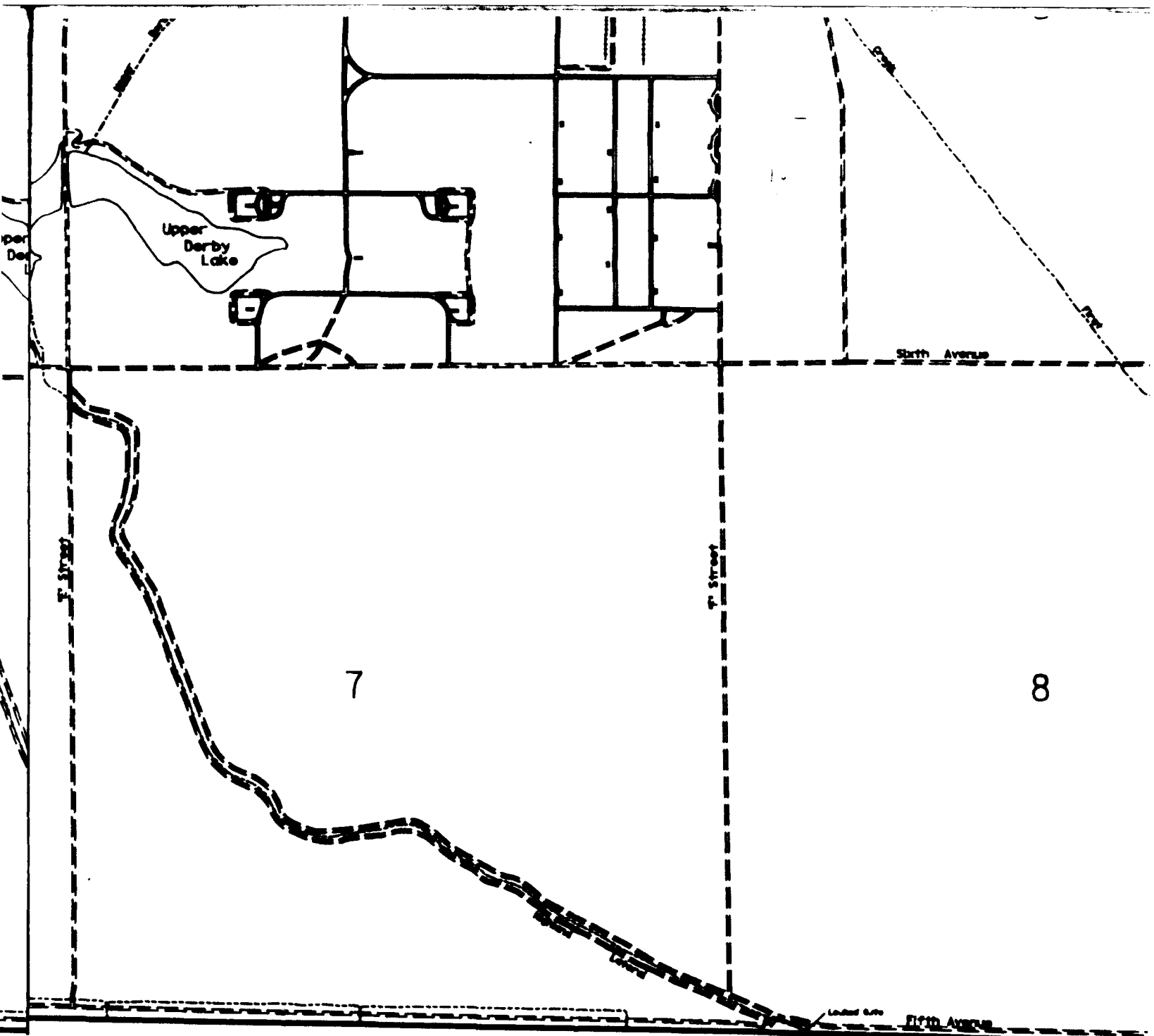
0 1000' 2000'
Scale 1"=1000'

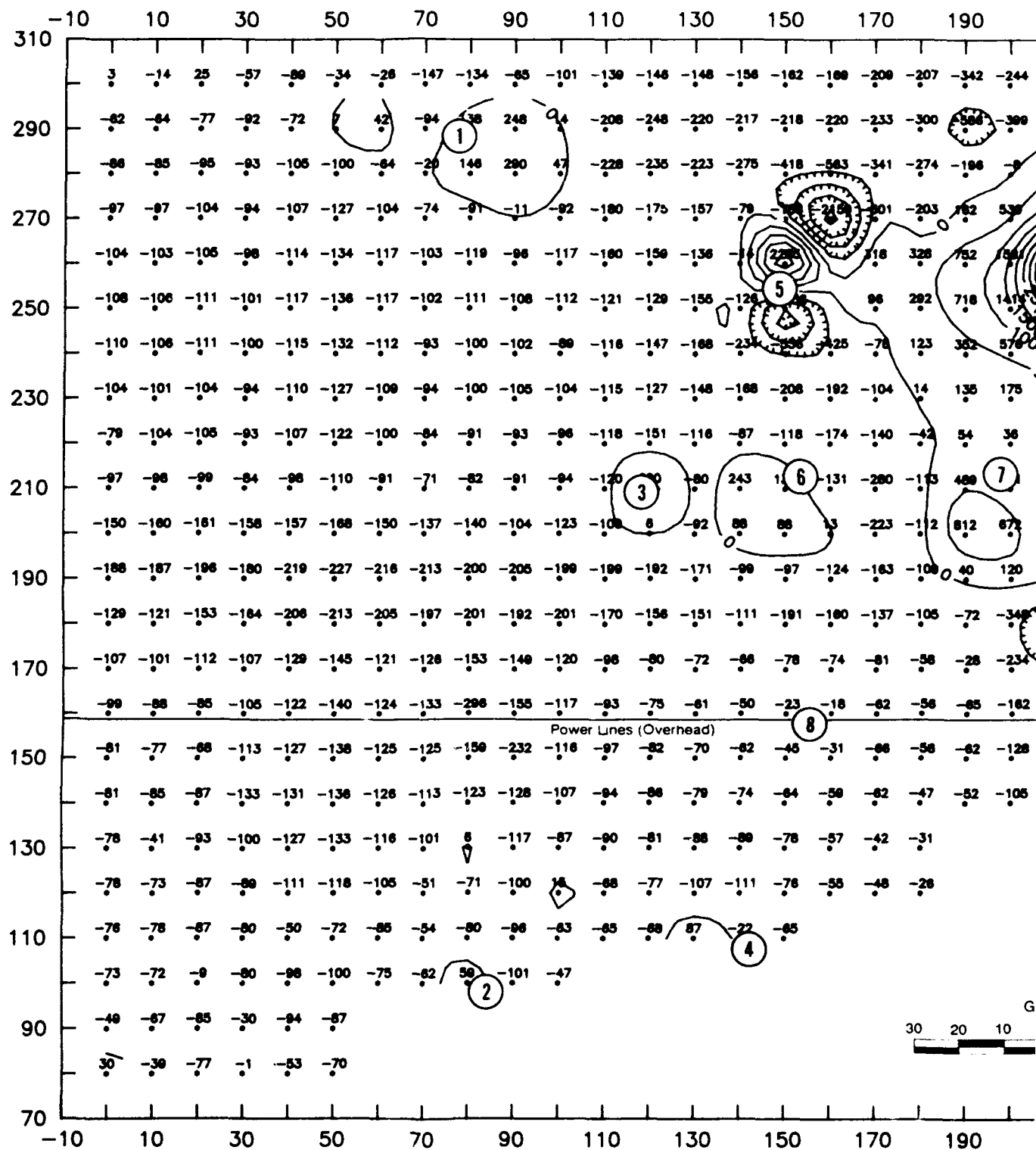


2185000



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Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland





EXPLANATION

17 Location and Intensity of Measurement

0 — Line of Equal Magnetic Intensity

Contour Interval = 500 Gammas (γ)

① Manhole Cover (Water Main)

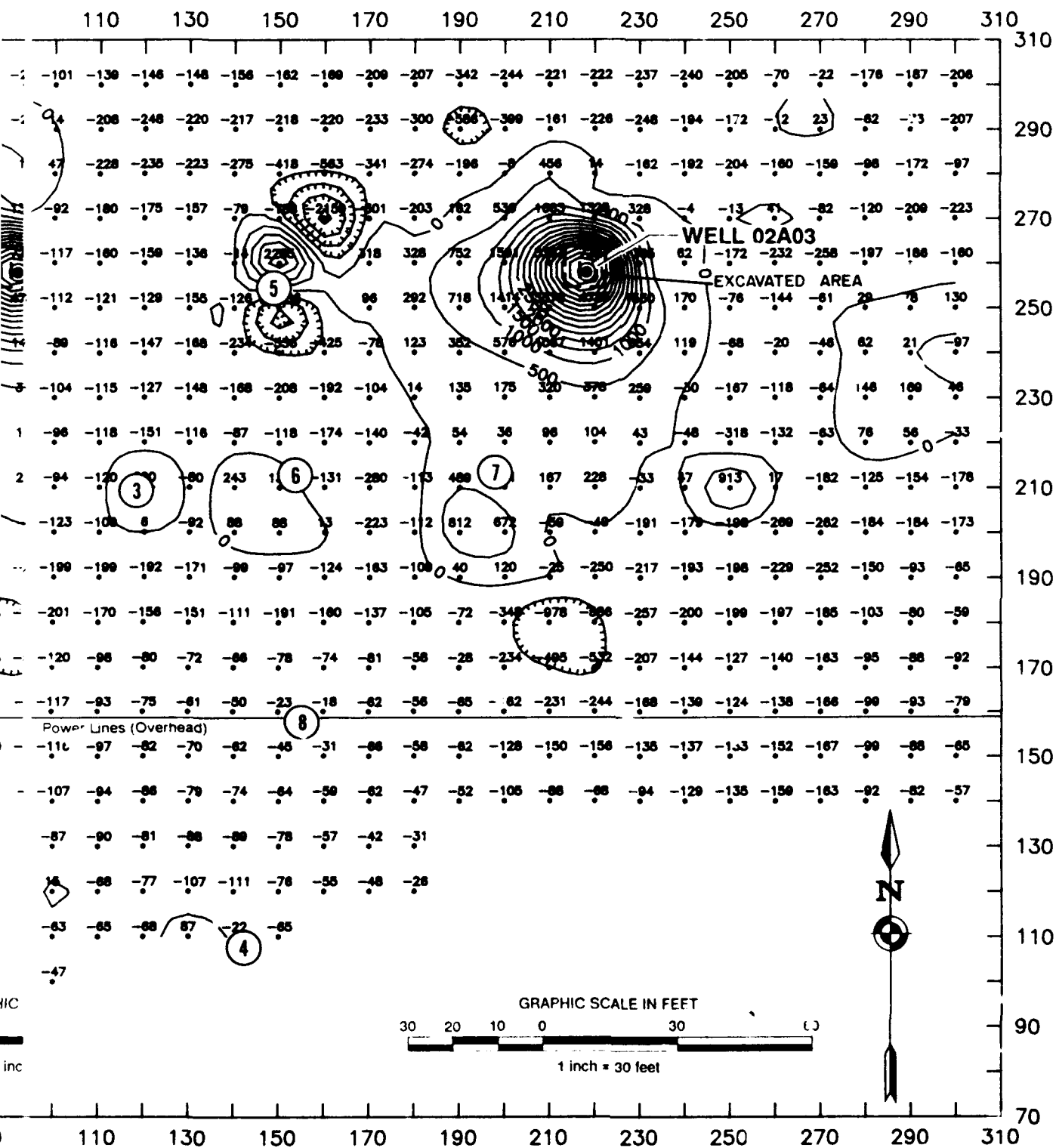
② Electrical Switch Box

③ "No Parking" Sign

④ Gar

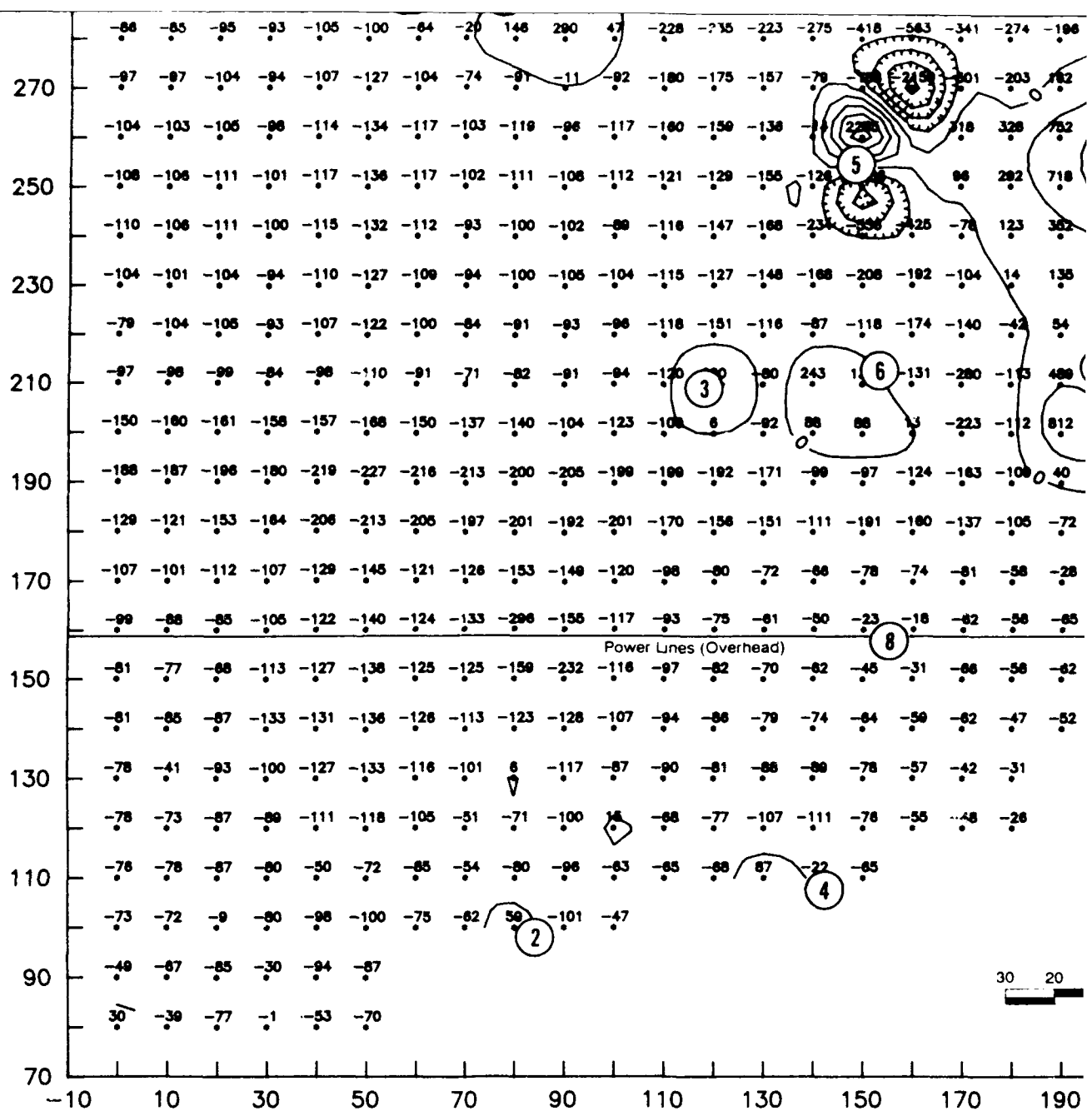
⑤ Tee

⑥ Sm

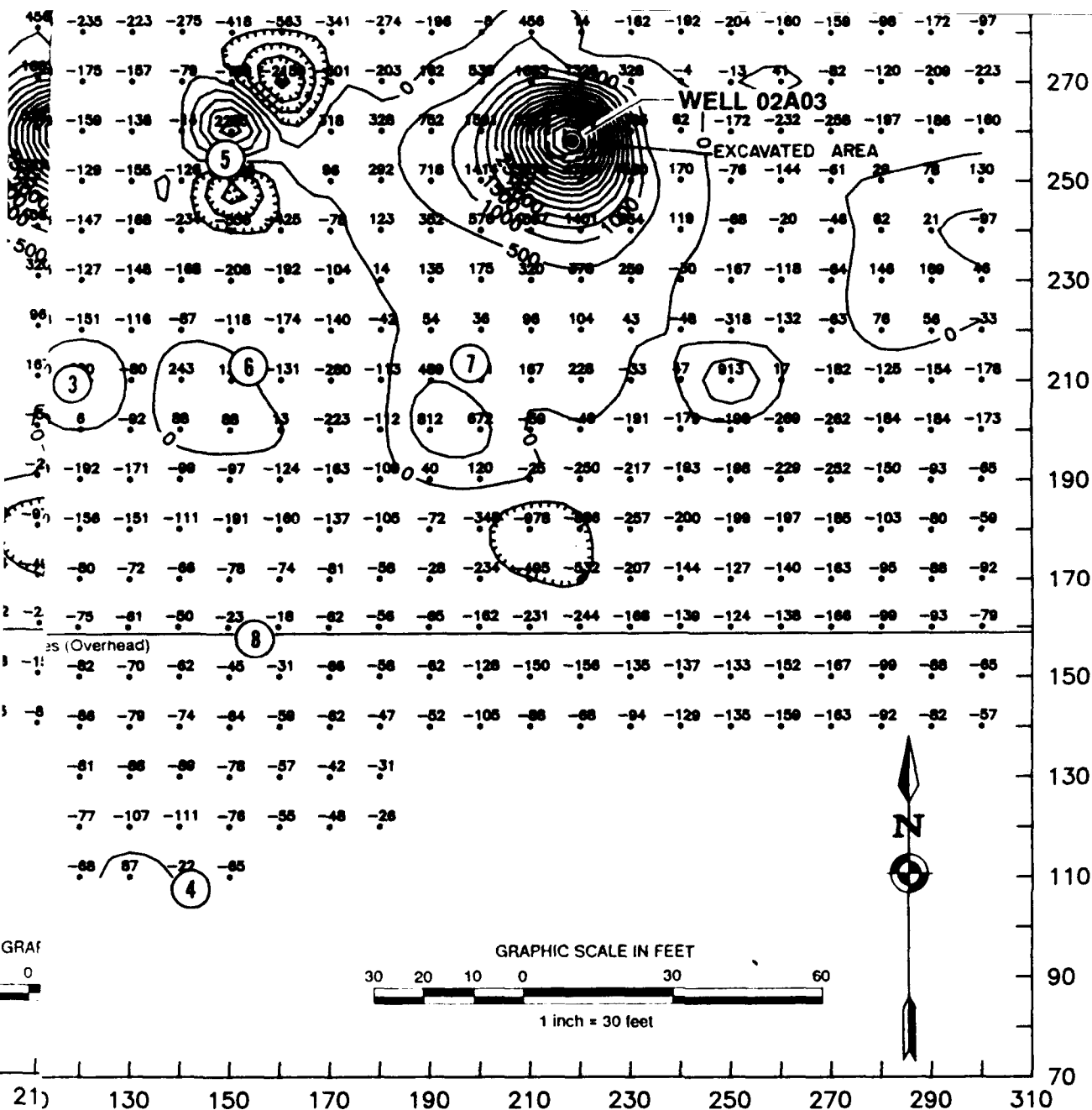


EXPLANATION

- | | | | |
|------|------------------------------|-----------------|--|
| Car | ① Manhole Cover (Water Main) | ④ Garbage Can | ⑦ Concrete Drain with Steel Gate Cover and "No Parking" Sign |
| otte | ② Electrical Switch Box | ⑤ Teeter-Totter | ⑧ Power Lines (Overhead) |
| gn | ③ "No Parking" Sign | ⑥ Small Sign | |



EXPLANATION			
17	Location and Intensity of Measurement	(1)	Manhole Cover (Water Main)
0	Line of Equal Magnetic Intensity	(2)	Electrical Switch Box
Contour Interval = 500 Gammas (γ)		(3)	"No Parking" Sign
Prepared For: Program Manager's Office for Rocky Mountain Arsenal Cleanup Aberdeen Proving Ground, Maryland		(4)	
		(5)	
		(6)	
		Plate	
		Total Rocky Prepa	



EXPLANATION

Garbage Manhole Cover (Water Main)

Teeter- Electrical Switch Box

Small "No Parking" Sign

④ Garbage Can

⑤ Teeter-Totter

⑥ Small Sign

⑦ Concrete Drain with Steel Grate Cover and "No Parking" Sign

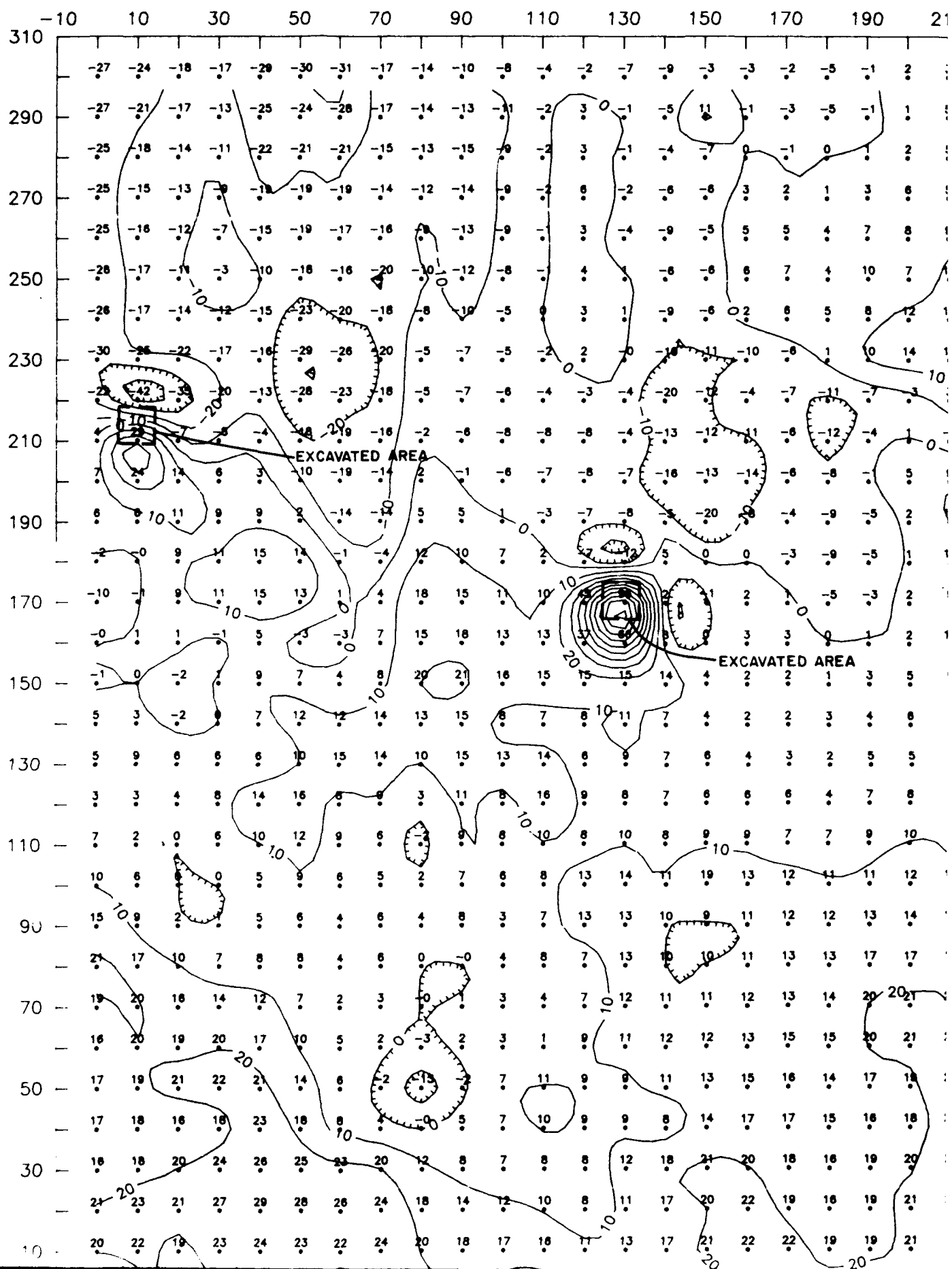
⑧ Power Lines (Overhead)

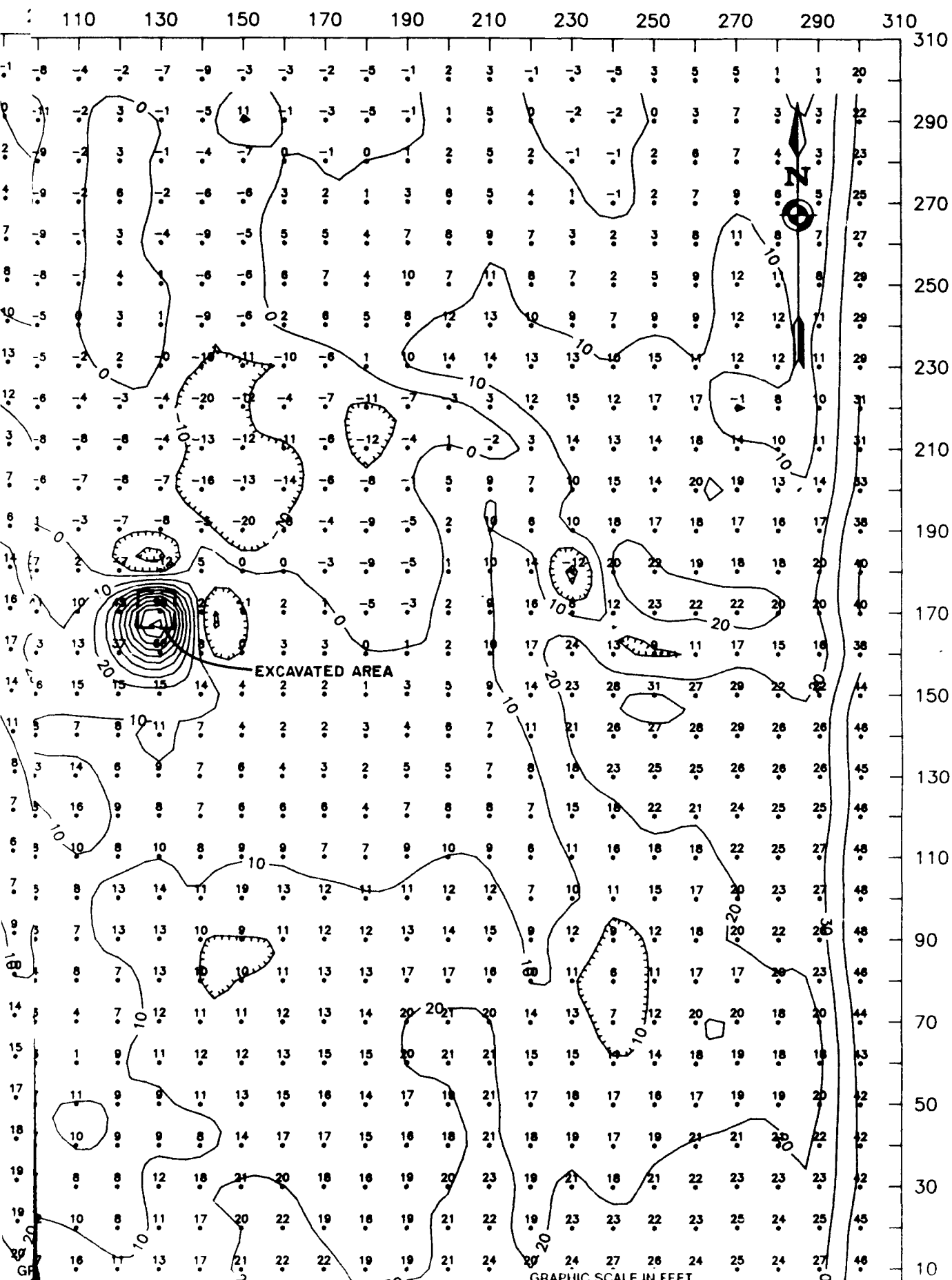
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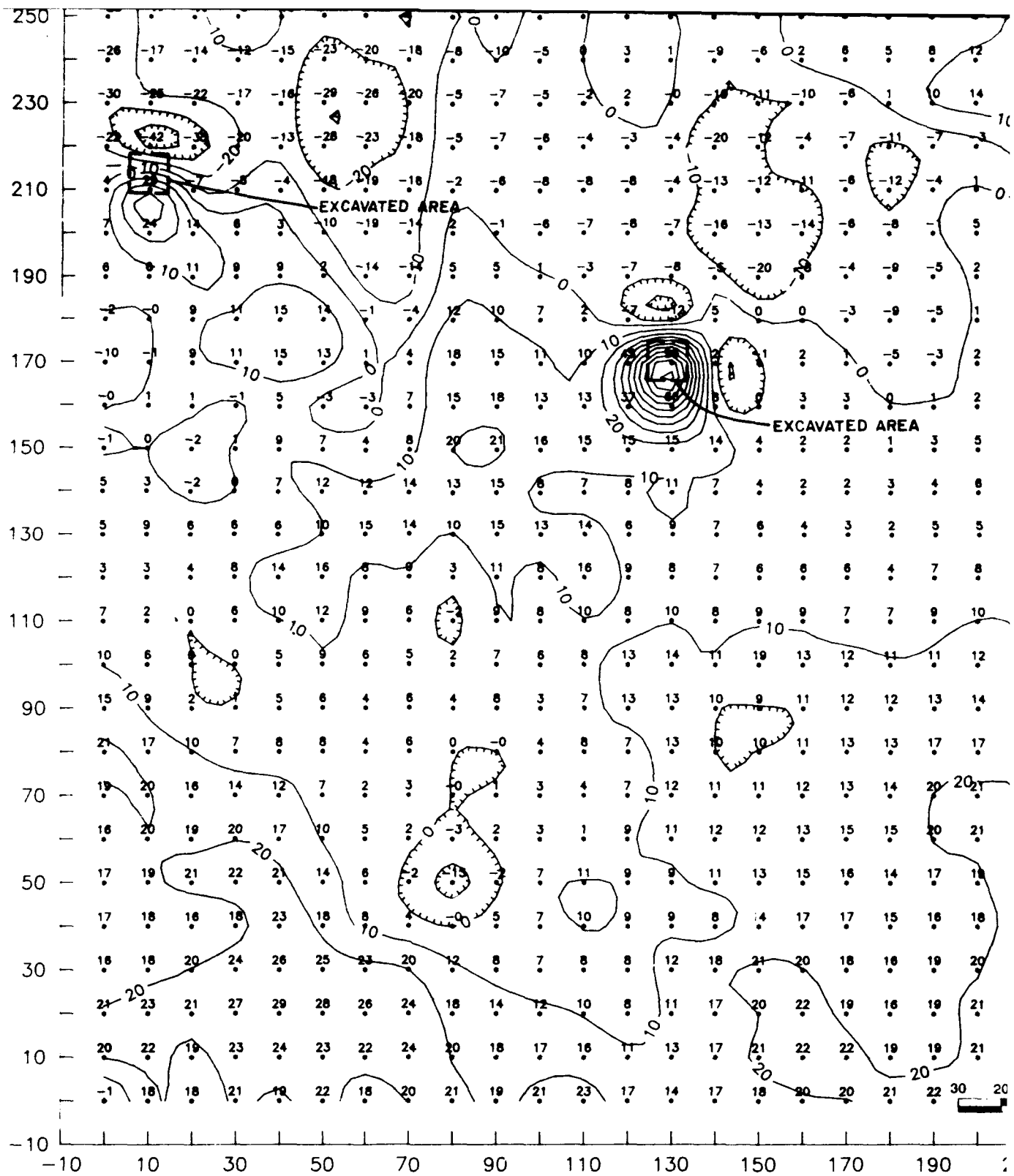
net
oun,
By

Plate No. 4

Total Magnetic Field Intensity, Grid 02A03
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.





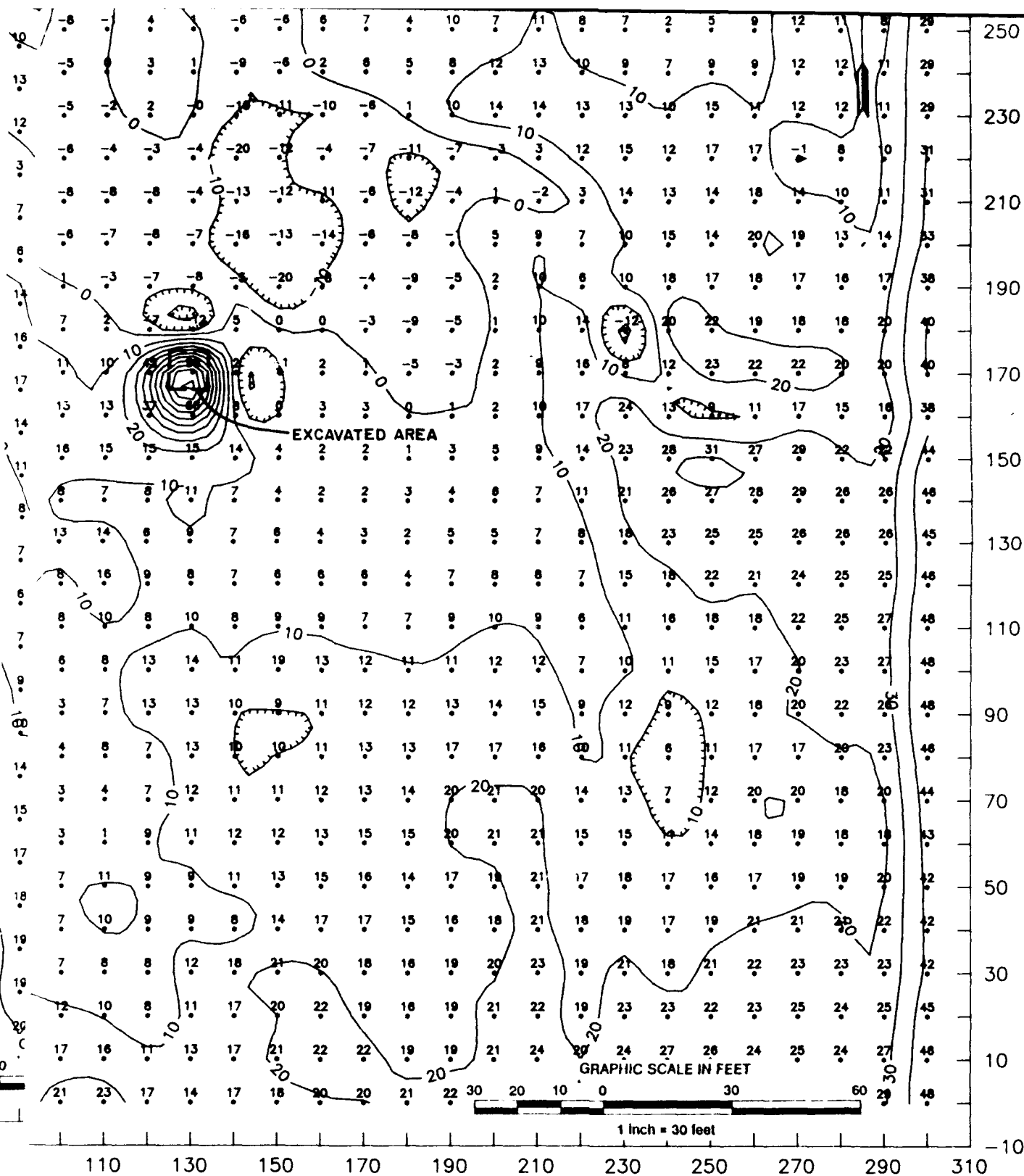


EXPLANATION

- 17 Location and Intensity of Measurement
- 0- Line of Equal Magnetic Intensity
- Contour Interval = 10 Gamma (γ)

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Aberdeen Proving Ground, Maryland

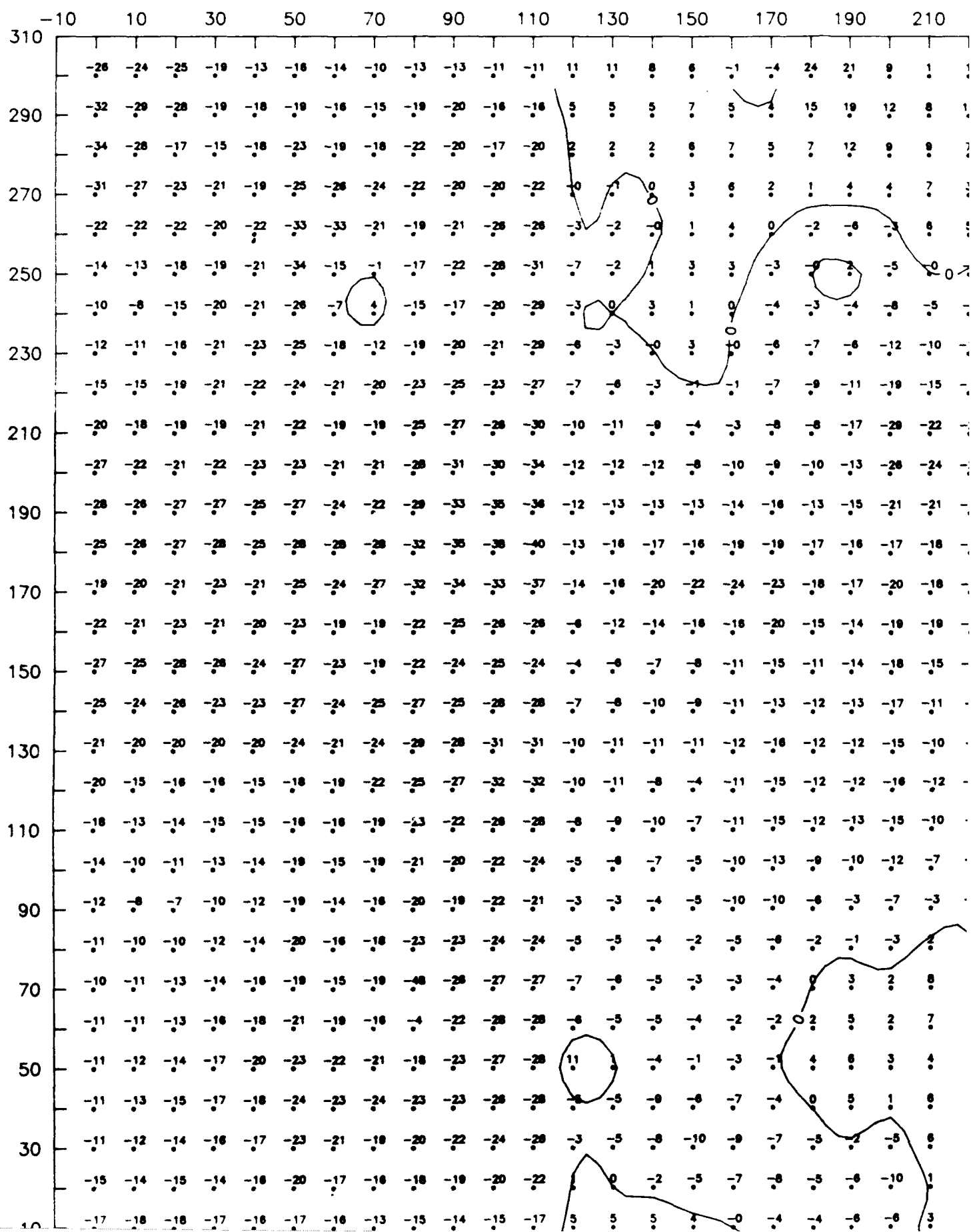
Pla
Tot
Rot
Pre

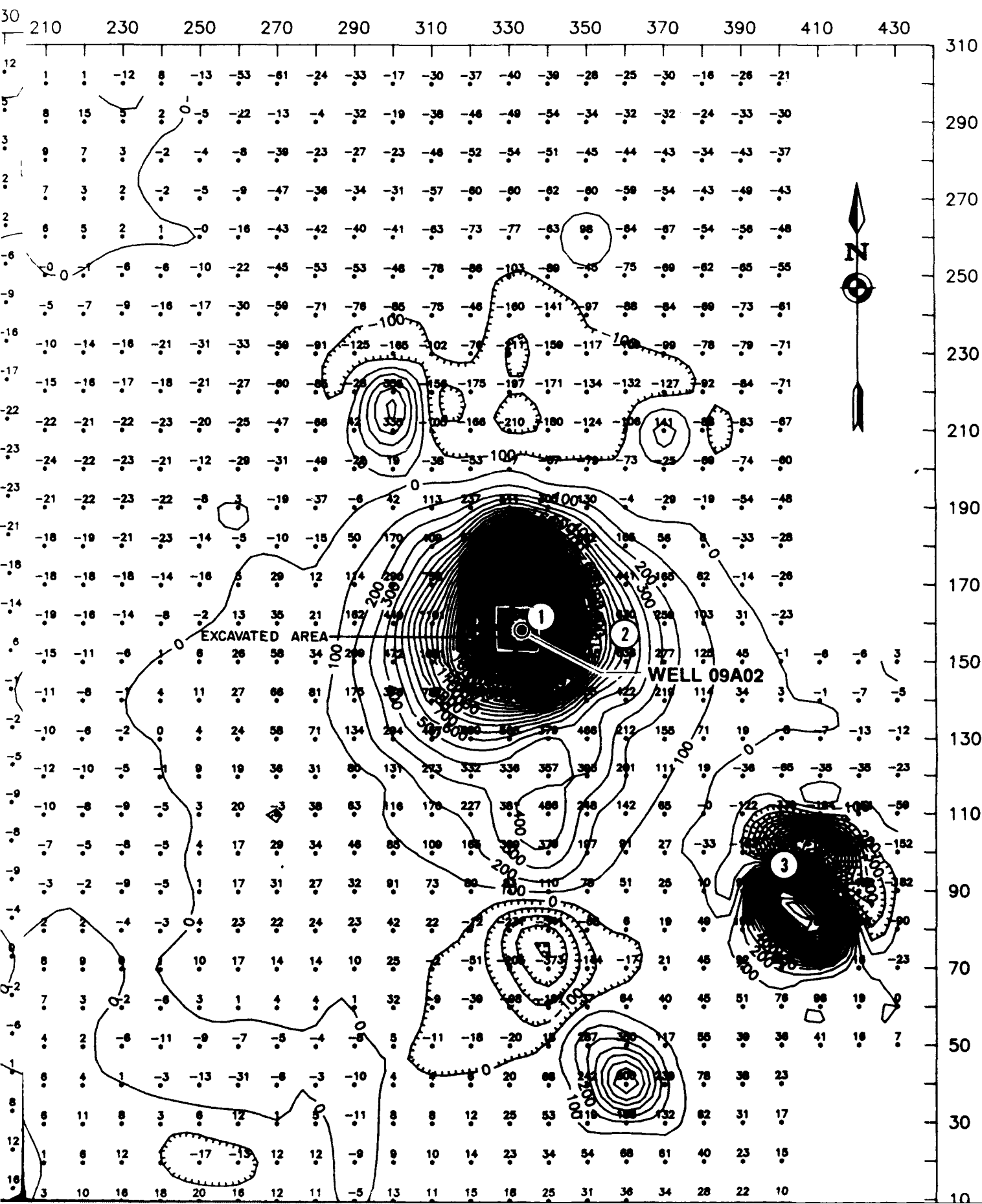


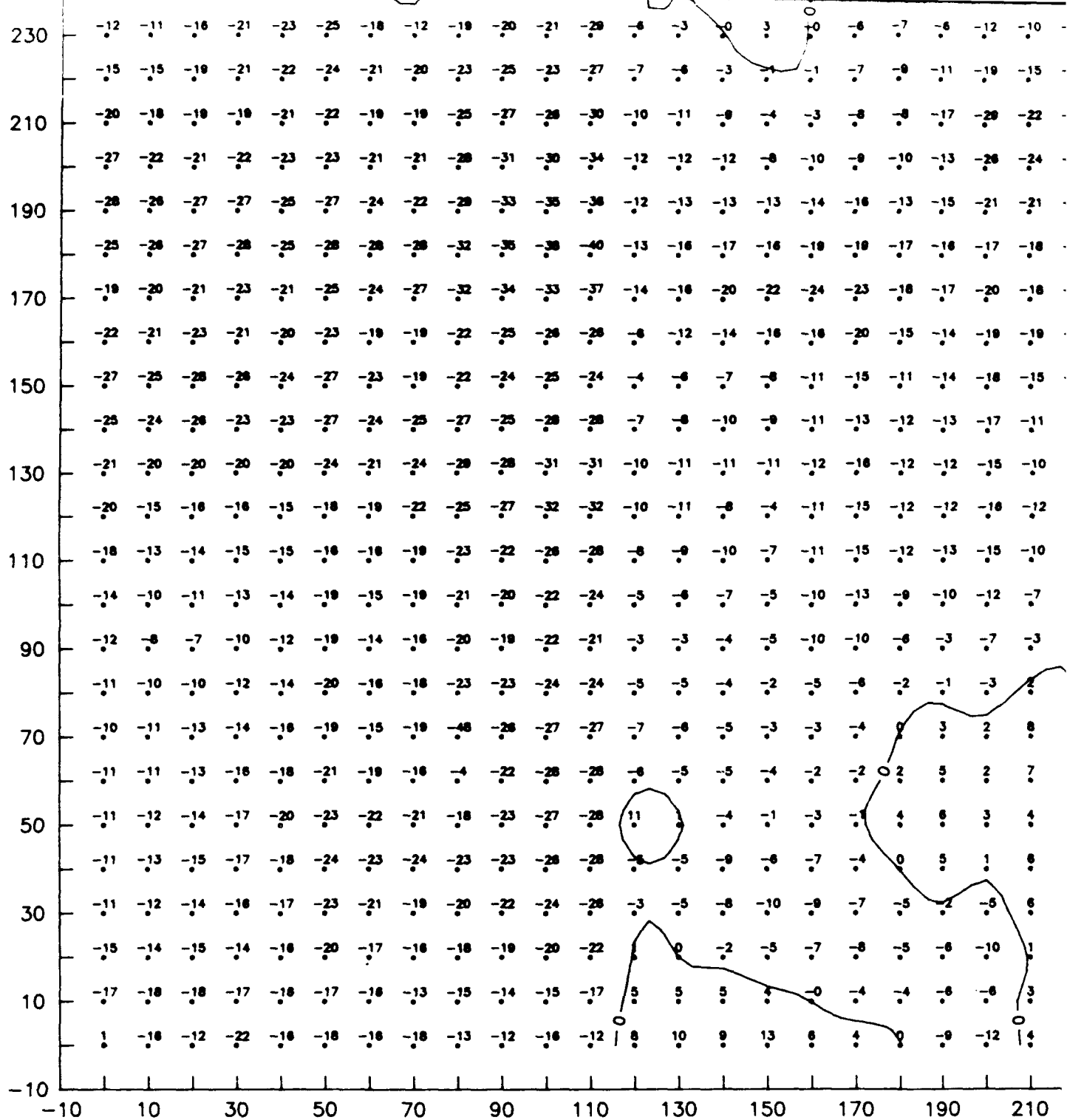
Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Berdeen Proving Ground, Maryland

Plate No. 5

Total Magnetic Field Intensity, Grid 04A12
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.







EXPLANATION

17 Location and Intensity of Measurement

Contour Interval = 100 Gammas (γ)

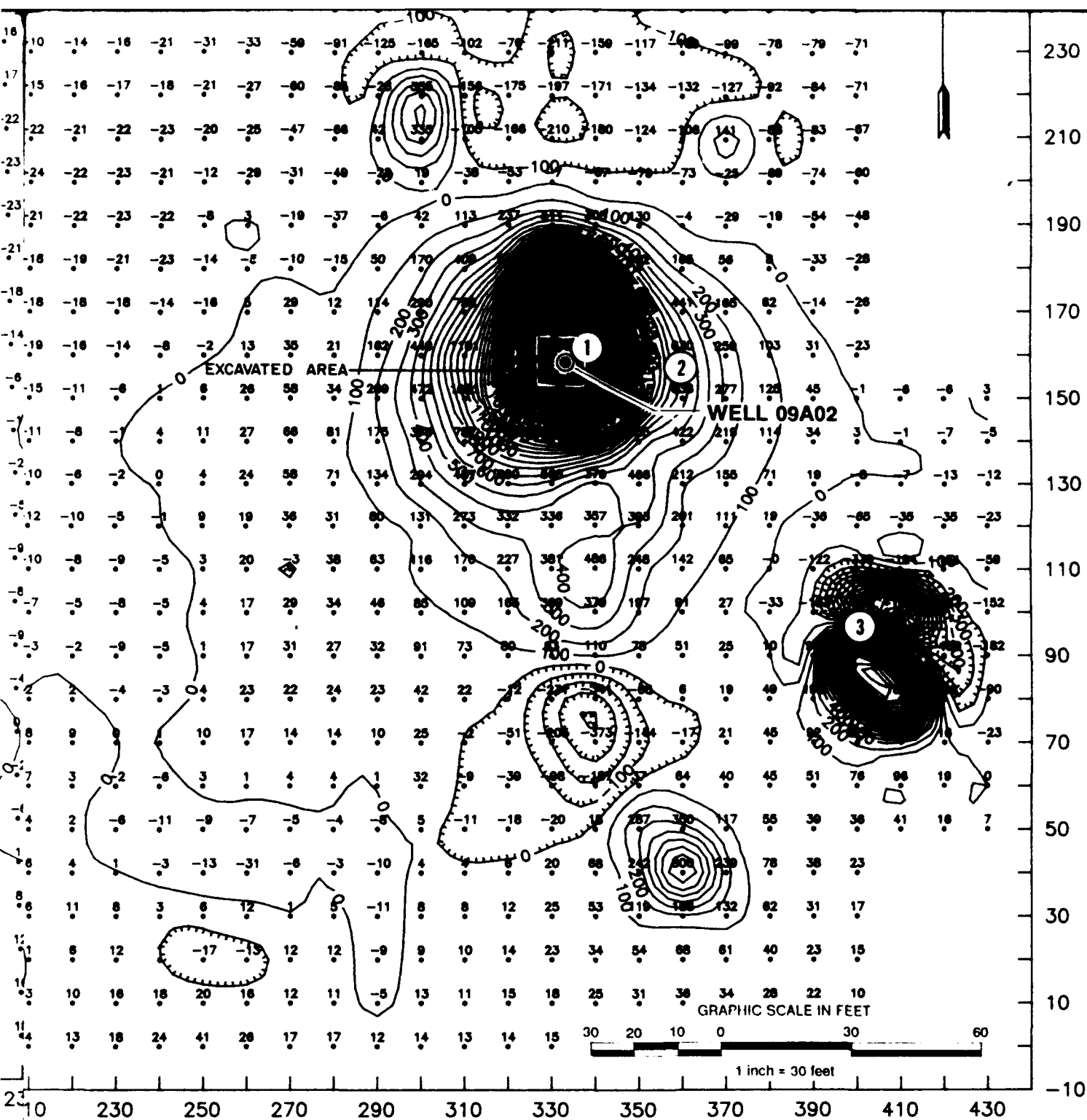
0 — Line of Equal Magnetic Intensity

① 3 in. Steel Pipes, Excavated

② Cistern

③ Surface Trash Pile

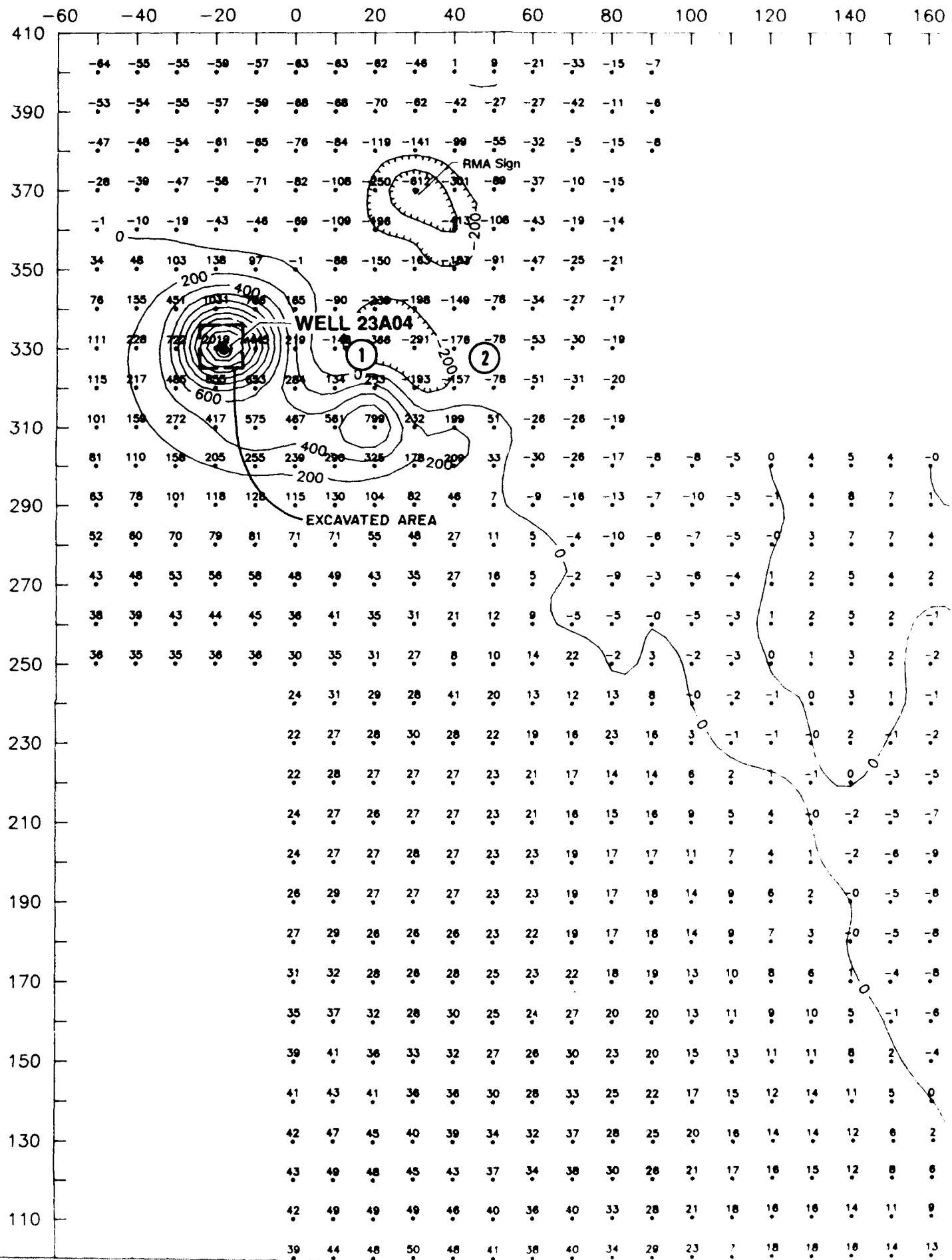
Pr
Pr
R
Al

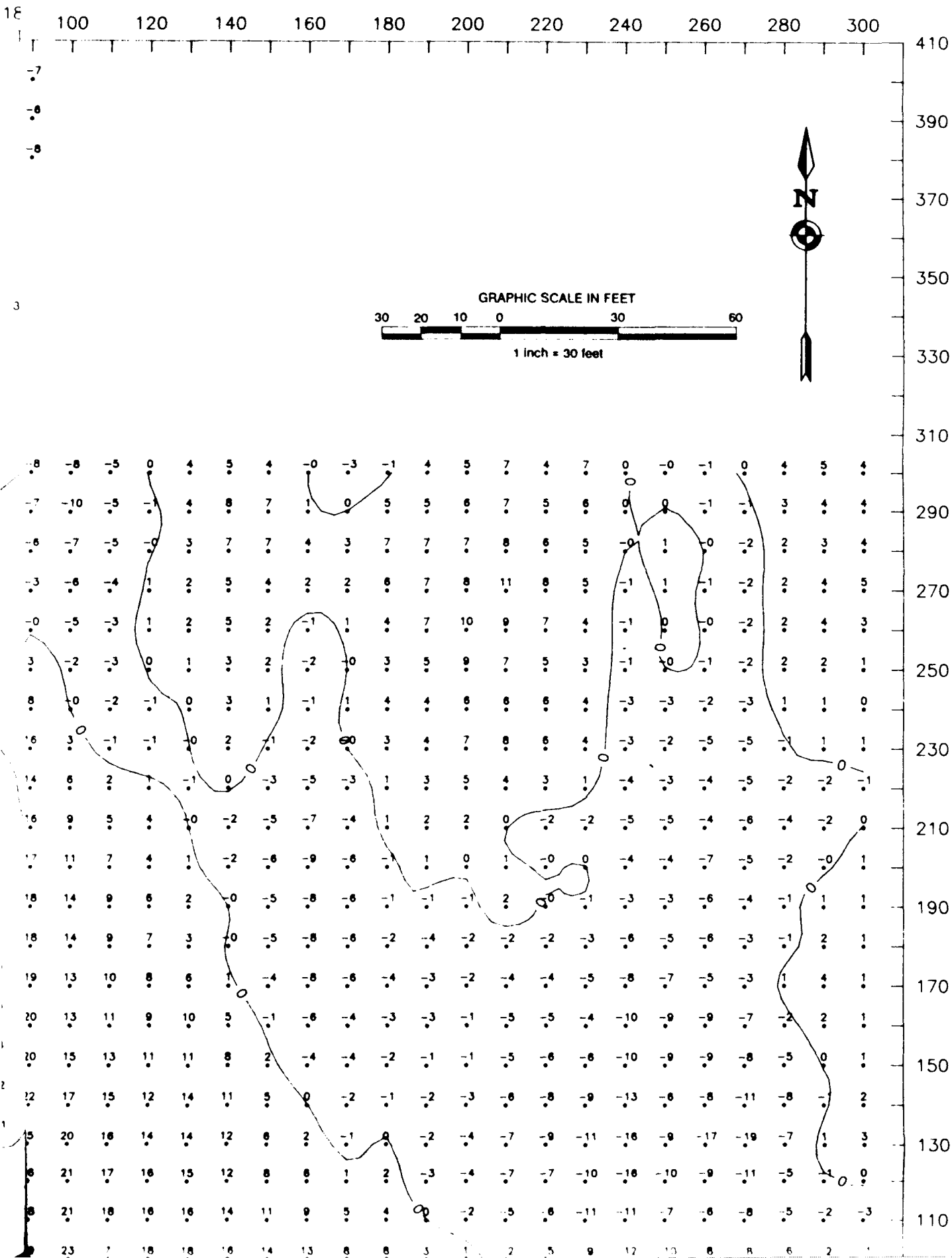


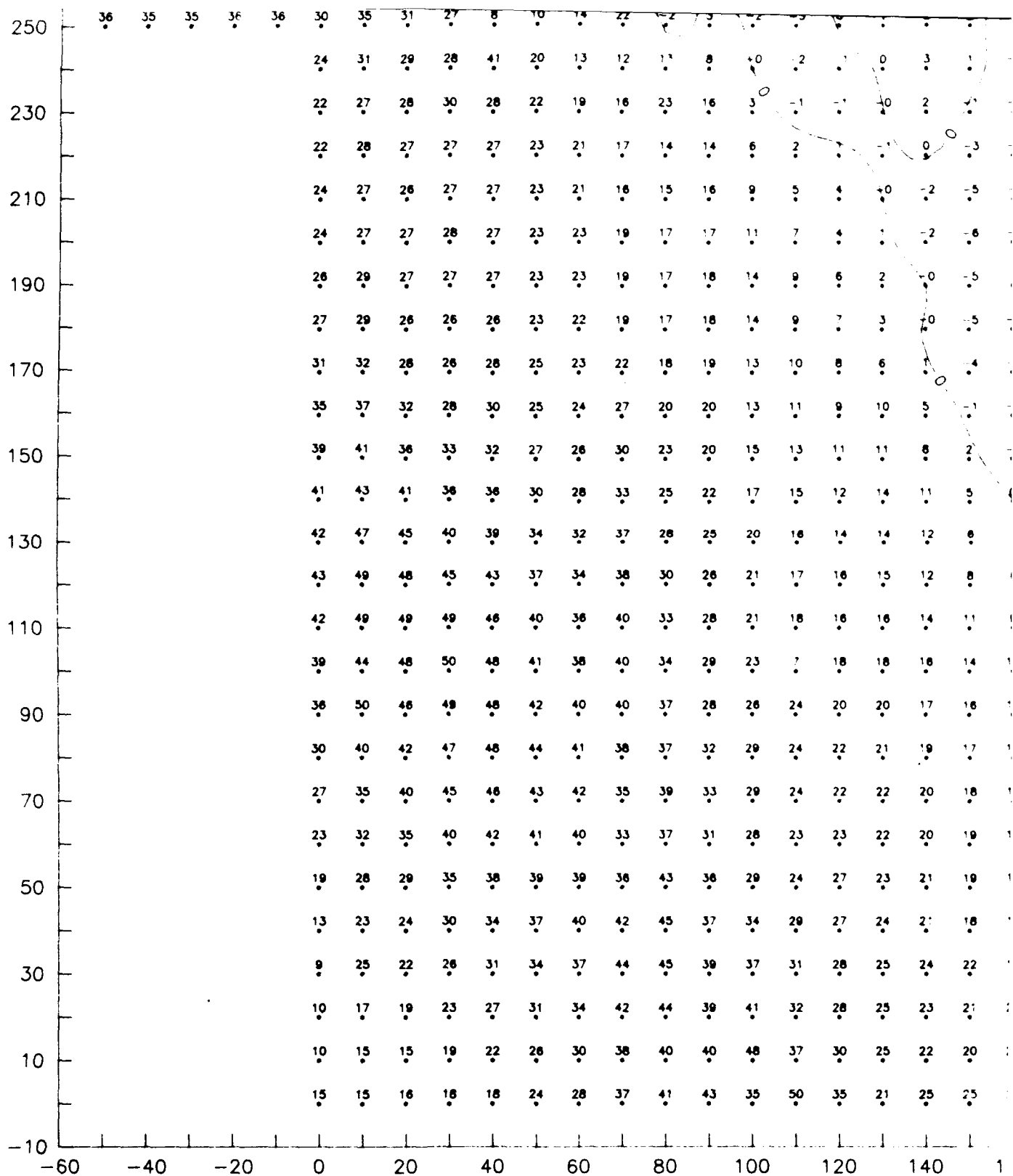
Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate No. 6

Total Magnetic Field Intensity, Grid 09A02
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.







EXPLANATION

17 Location and Intensity of Measurement

0 — Line of Equal Magnetic Intensity

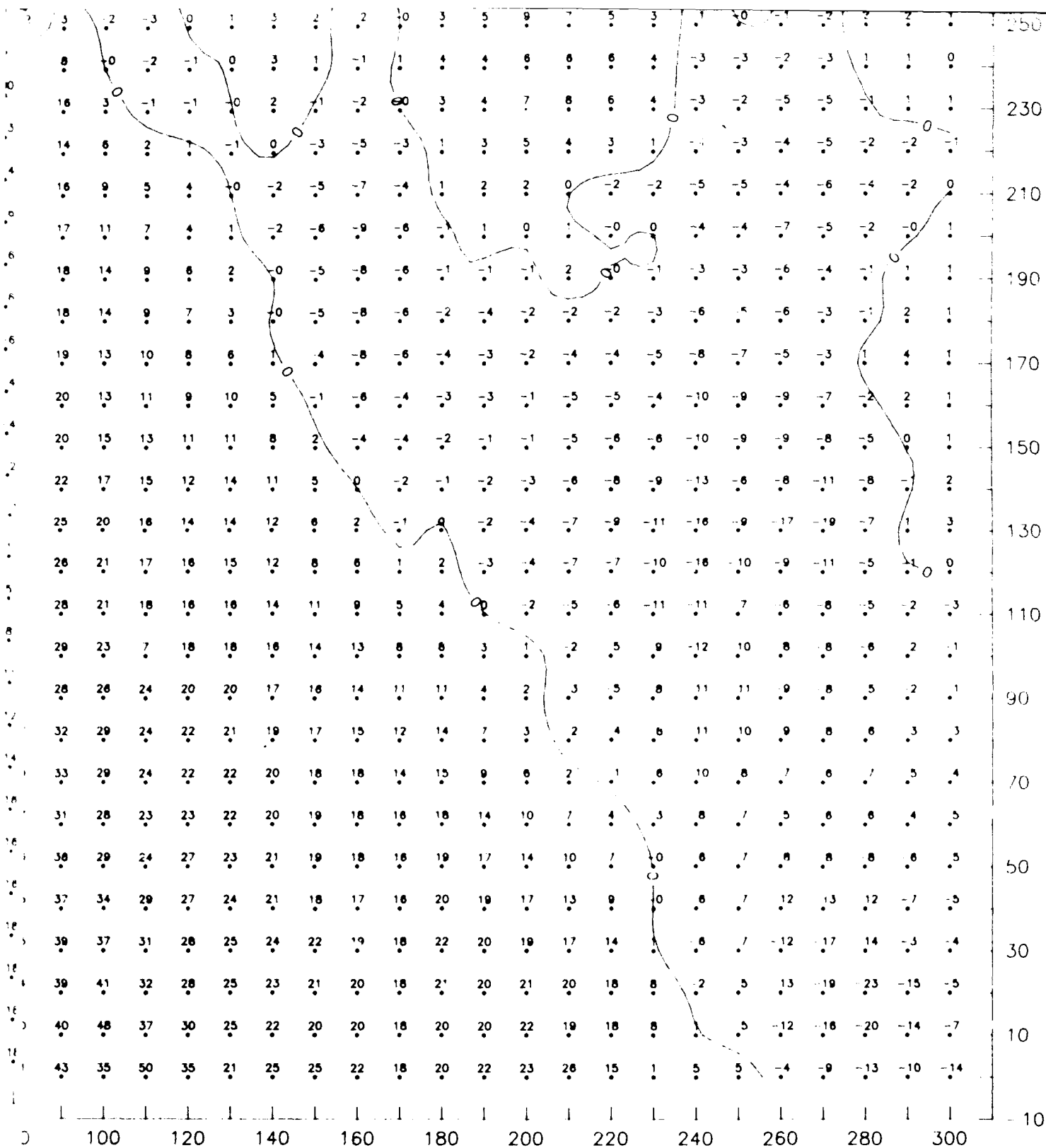
Contour Interval = 200 Gammas (γ)

① Metal On Surface *

② Metal On Surface *

* = Possible Galvanized Type Casing

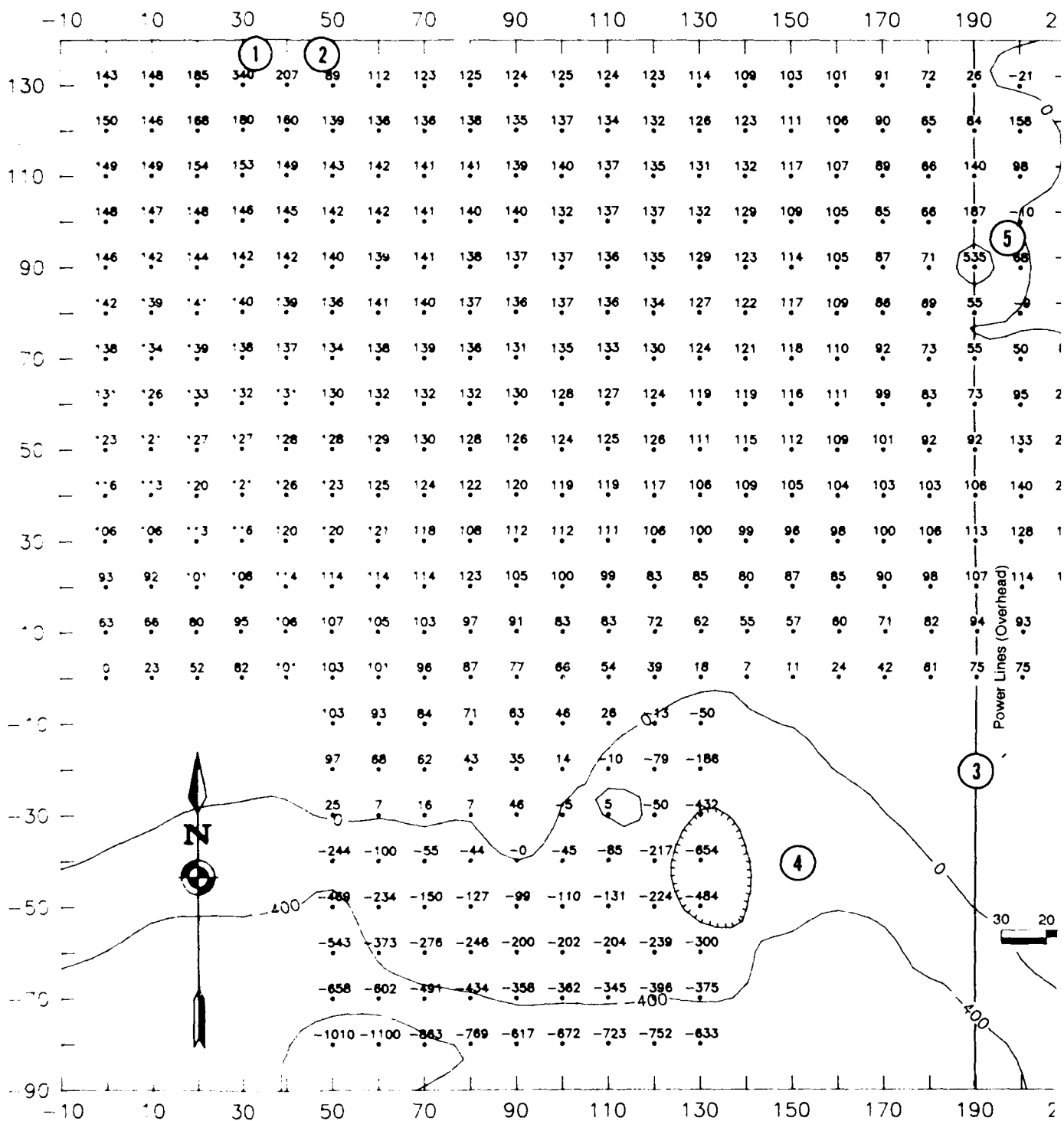
Prepared For:
Program Manager's Office
Rocky Mountain Arsenal
Aberdeen Proving Ground



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 Program Manager's Office for
 Rocky Mountain Arsenal Cleanup
 Aberdeen Proving Ground, Maryland

Plate No. 7

Total Magnetic Field Intensity, Grid 23A04
 Rocky Mountain Arsenal, Task 37
 Prepared By: Geraghty & Miller, Inc.



EXPLANATION

17 Location and Intensity of Measurement

0 — Line of Equal Magnetic Intensity

Contour Interval = 400 Gammas (γ)

1 Sheet Metal

2 PVC Well

3 Power Line (Overhead)

4 LP Gas Tank

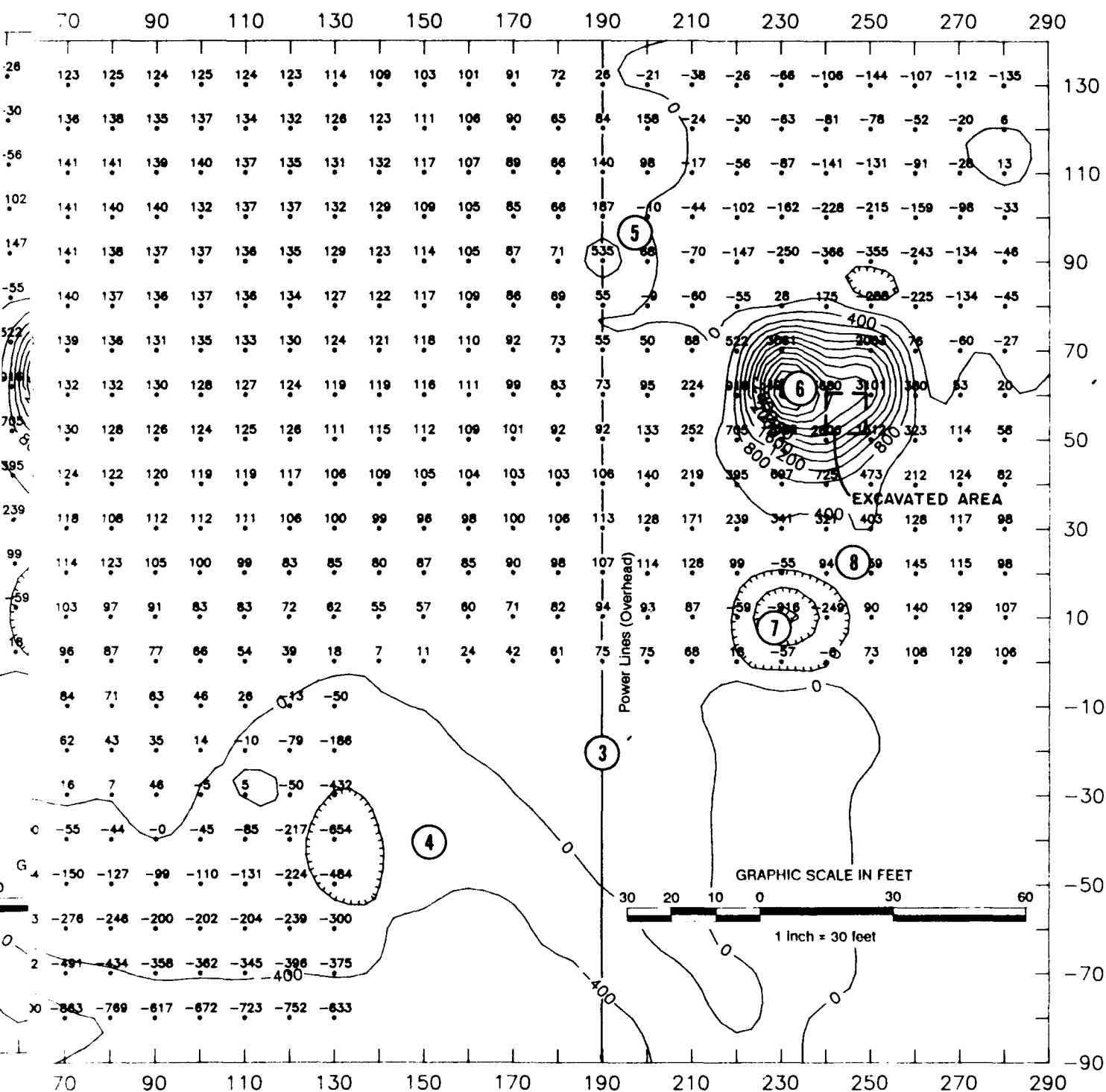
5 Telephone Pole with Meter Box

6 Well with 3 Metal Stakes Around It and 14 Plastic Drums with Metal Rings

Prepared For:
Program Manager's Office for

Plate No. 8

Total Magnetic Field

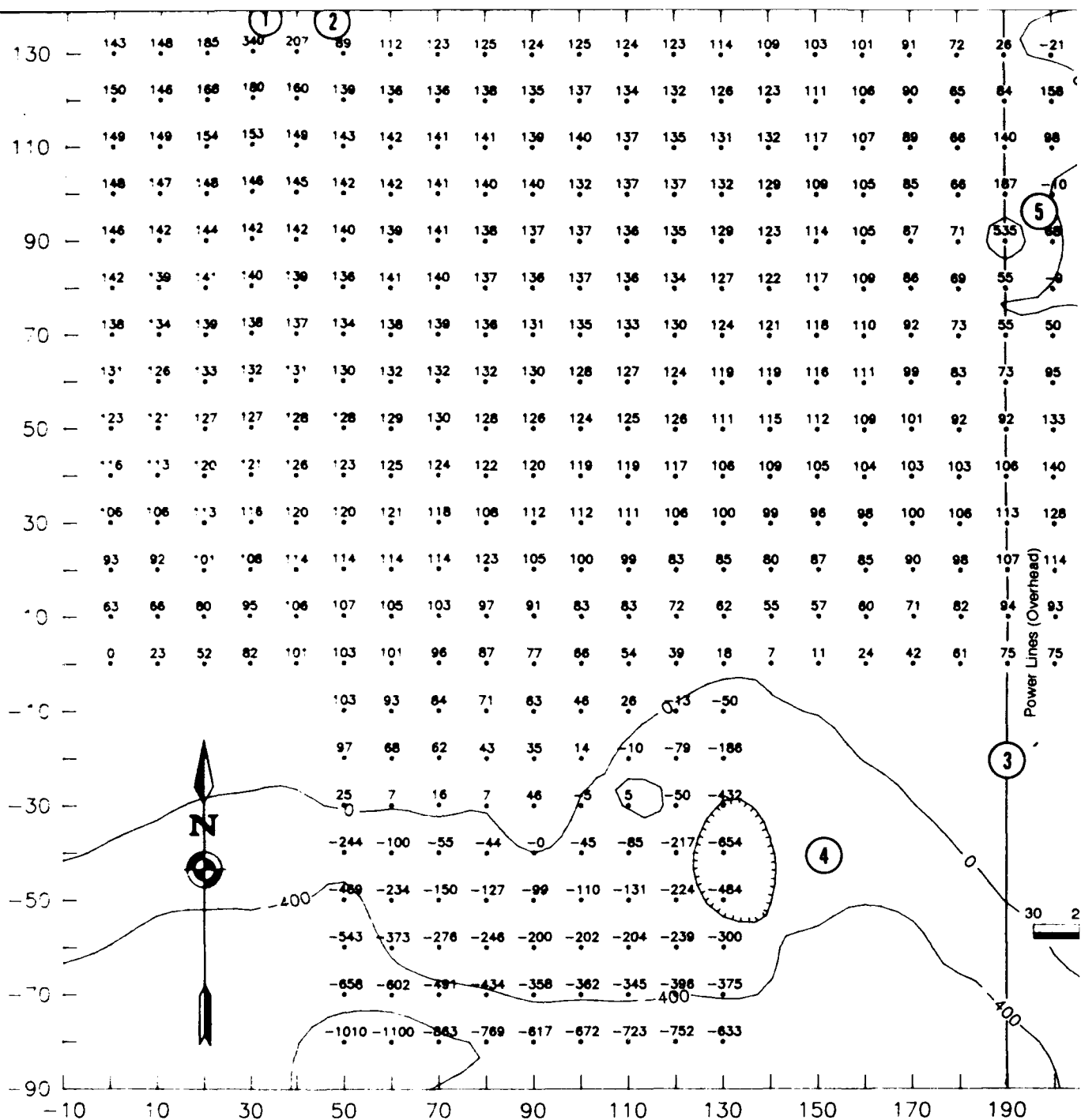


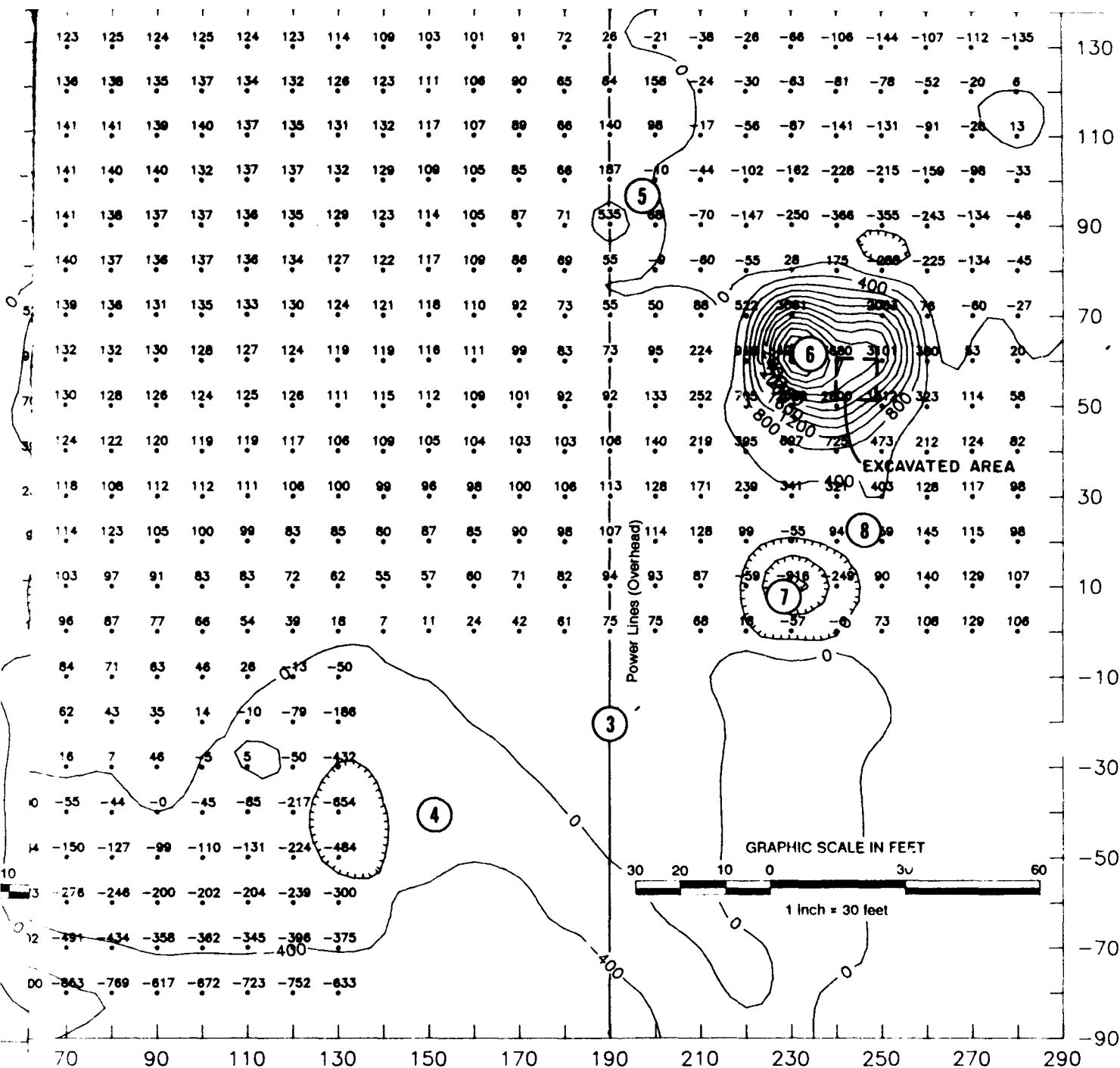
EXPLANATION

- | | | |
|---------------------------|--|---|
| (1) Sheet Metal | (4) LP Gas Tank | (7) Well with 3 Metal Stakes Around It and 5 Plastic Drums with Metal Rings |
| (2) PVC Well | (5) Telephone Pole with Meter Box | (8) Metal Stake (4 ft. high) |
| (3) Power Line (Overhead) | (6) Well with 3 Metal Stakes Around It and 14 Plastic Drums with Metal Rings | |

Plate No. 8

Total Magnetic Field Intensity. Grid 23A06





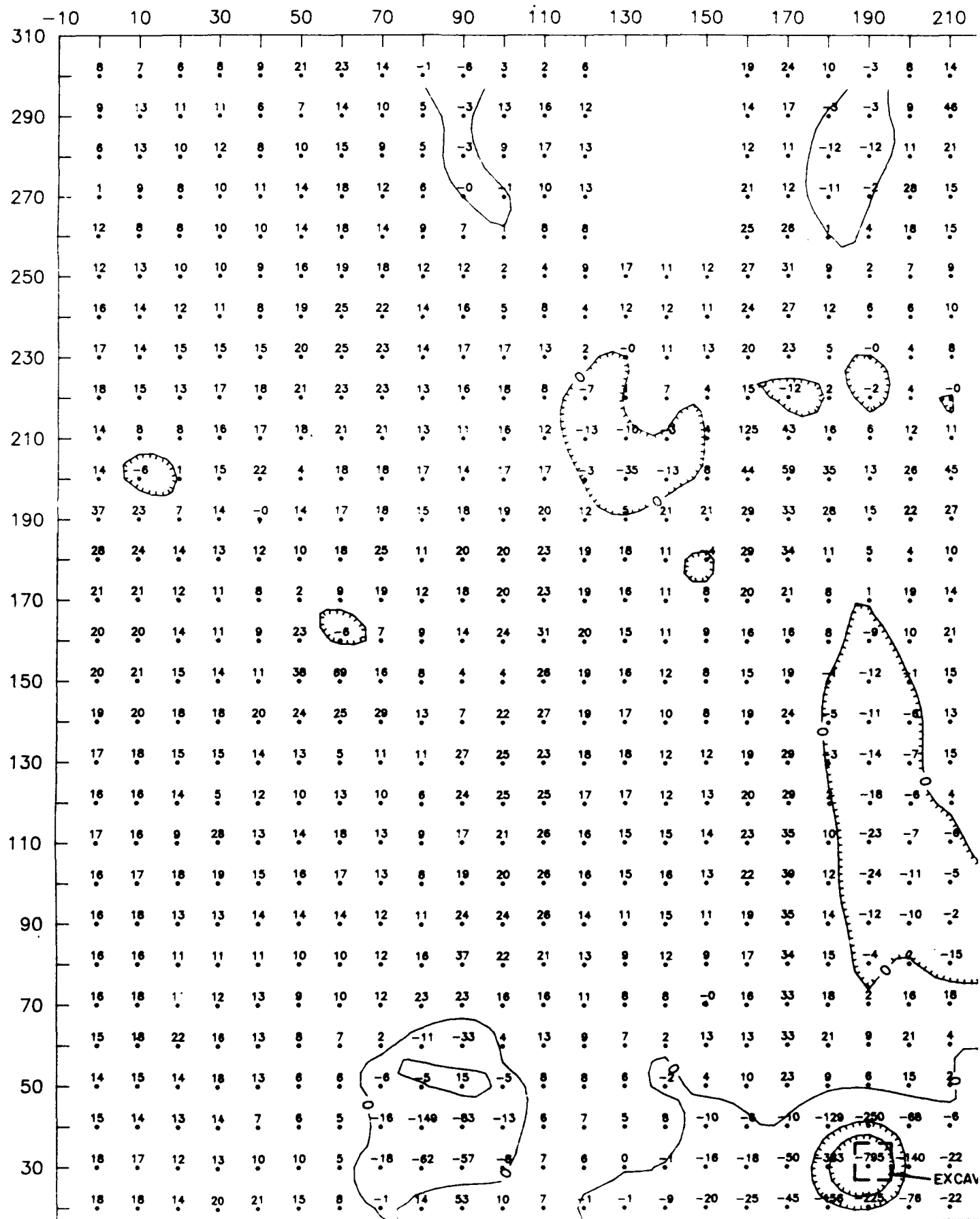
EXPLANATION

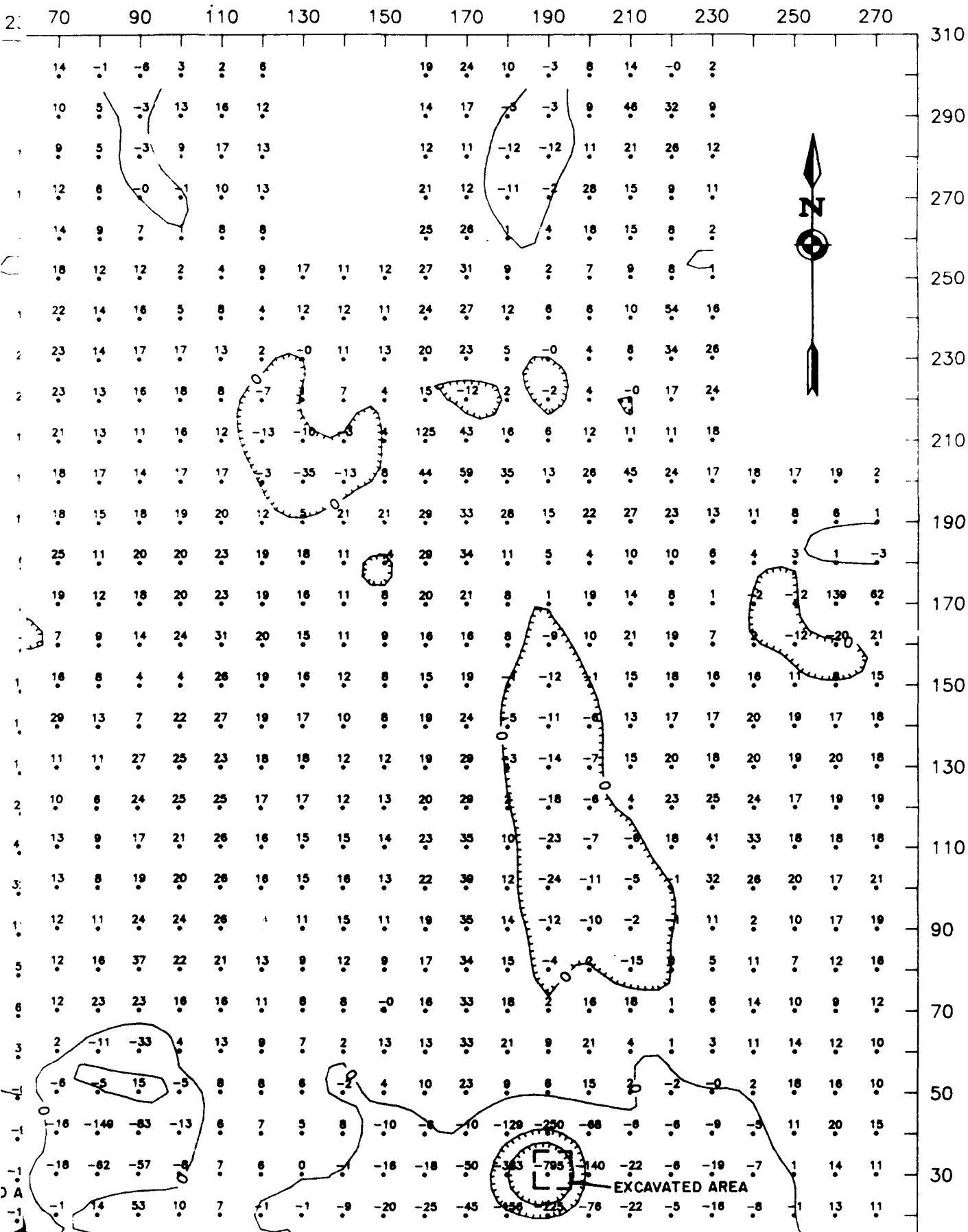
- | | | |
|-------------------------|--|---|
| 1 Sheet Metal | 4 LP Gas Tank | 7 Well with 3 Metal Stakes Around It and 5 Plastic Drums with Metal Rings |
| 2 PVC Well | 5 Telephone Pole with Meter Box | 8 Metal Stake (4 ft. high) |
| 3 Power Line (Overhead) | 6 Well with 3 Metal Stakes Around It and 14 Plastic Drums with Metal Rings | |

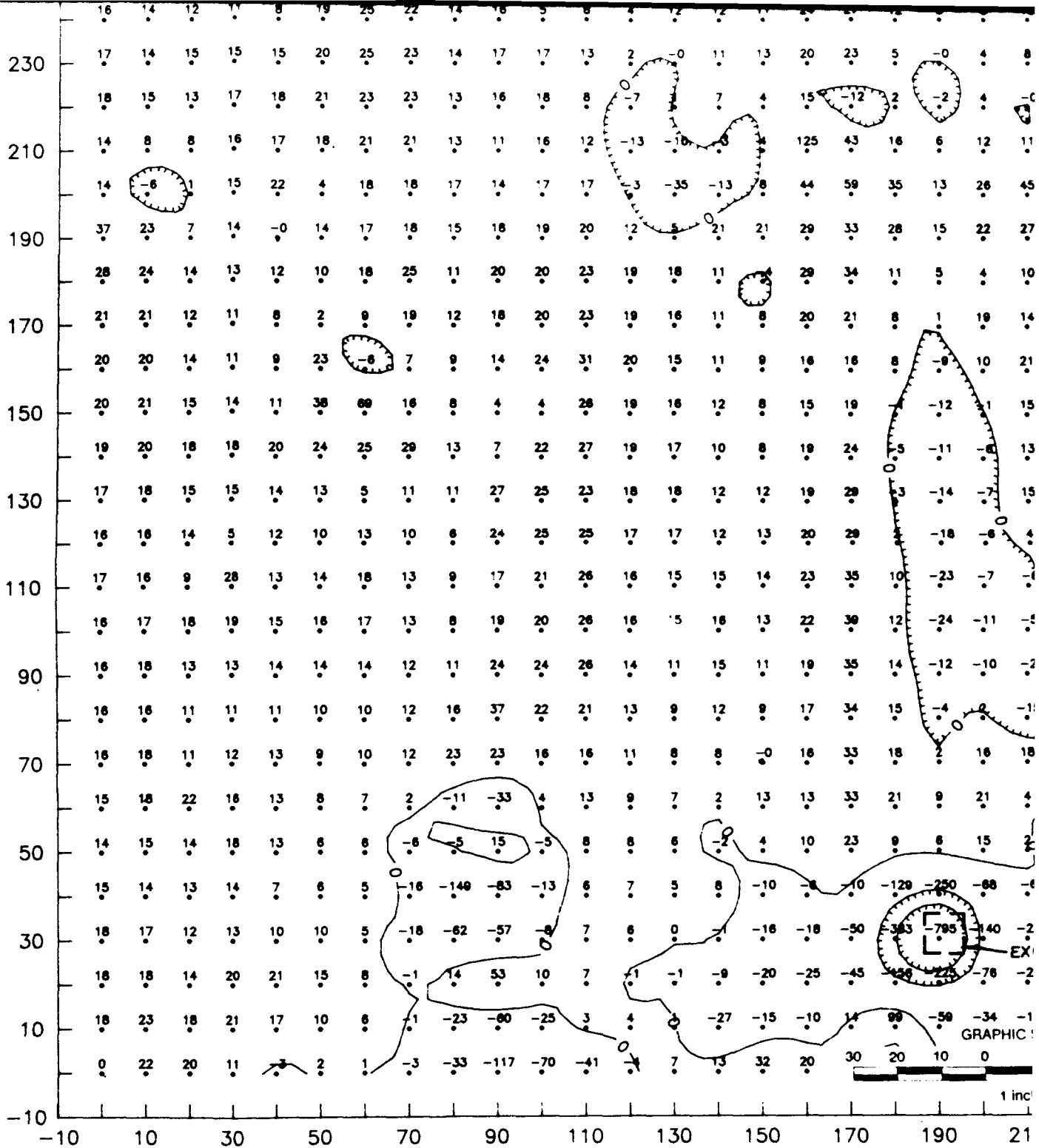
Plate No. 8

Office for
Arsenal Cleanup
Ground, Maryland

Total Magnetic Field Intensity, Grid 23A06
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.







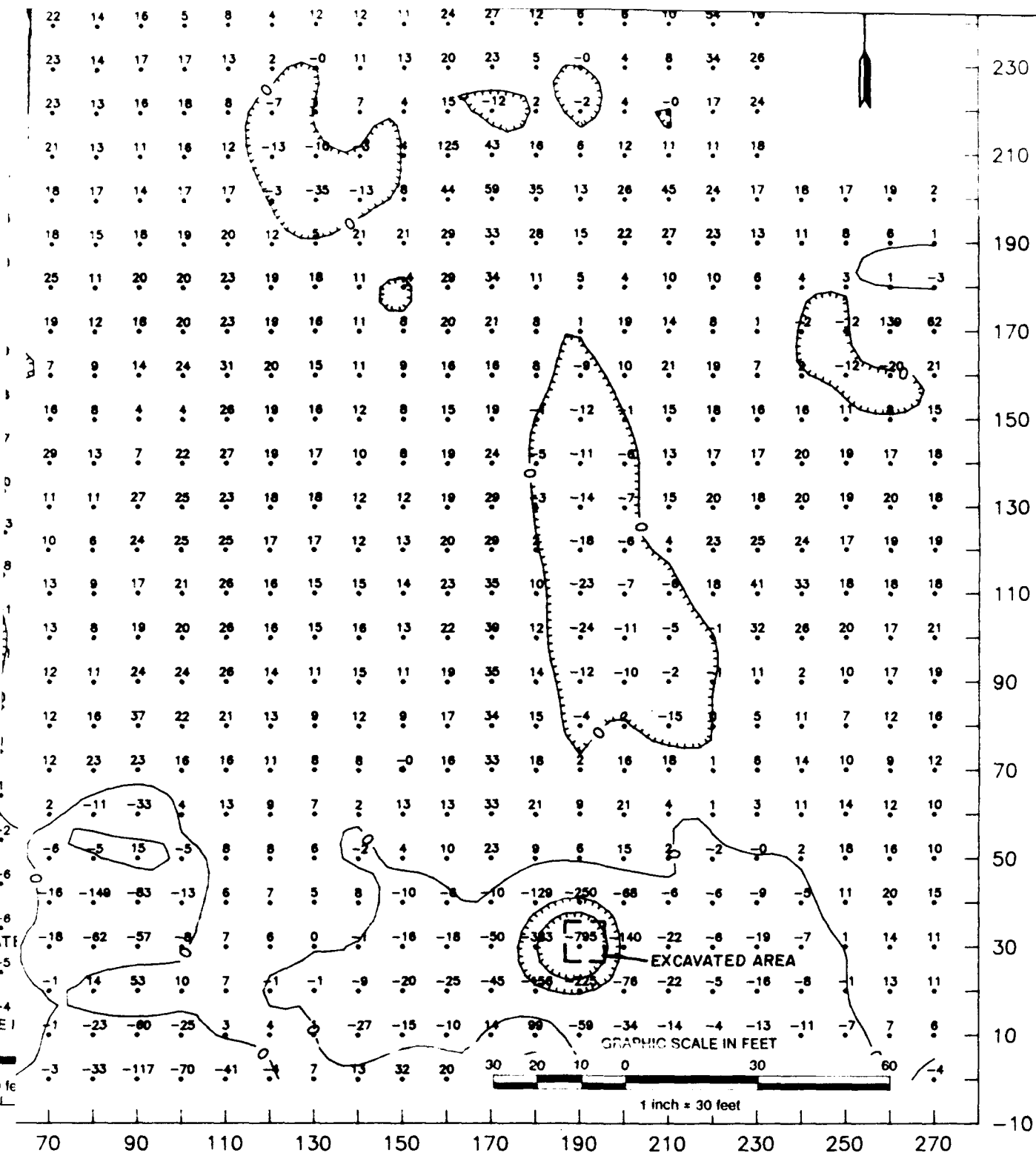
EXPLANATION

- 17 Location and Intensity of Measurement
- Line of Equal Magnetic Intensity
- Contour Interval = 200 Gammas (γ)

Prepared For:
**Program Manager's Office for
 Rocky Mountain Arsenal Cleanup
 Aberdeen Proving Ground, Maryland**

Plate No. 9

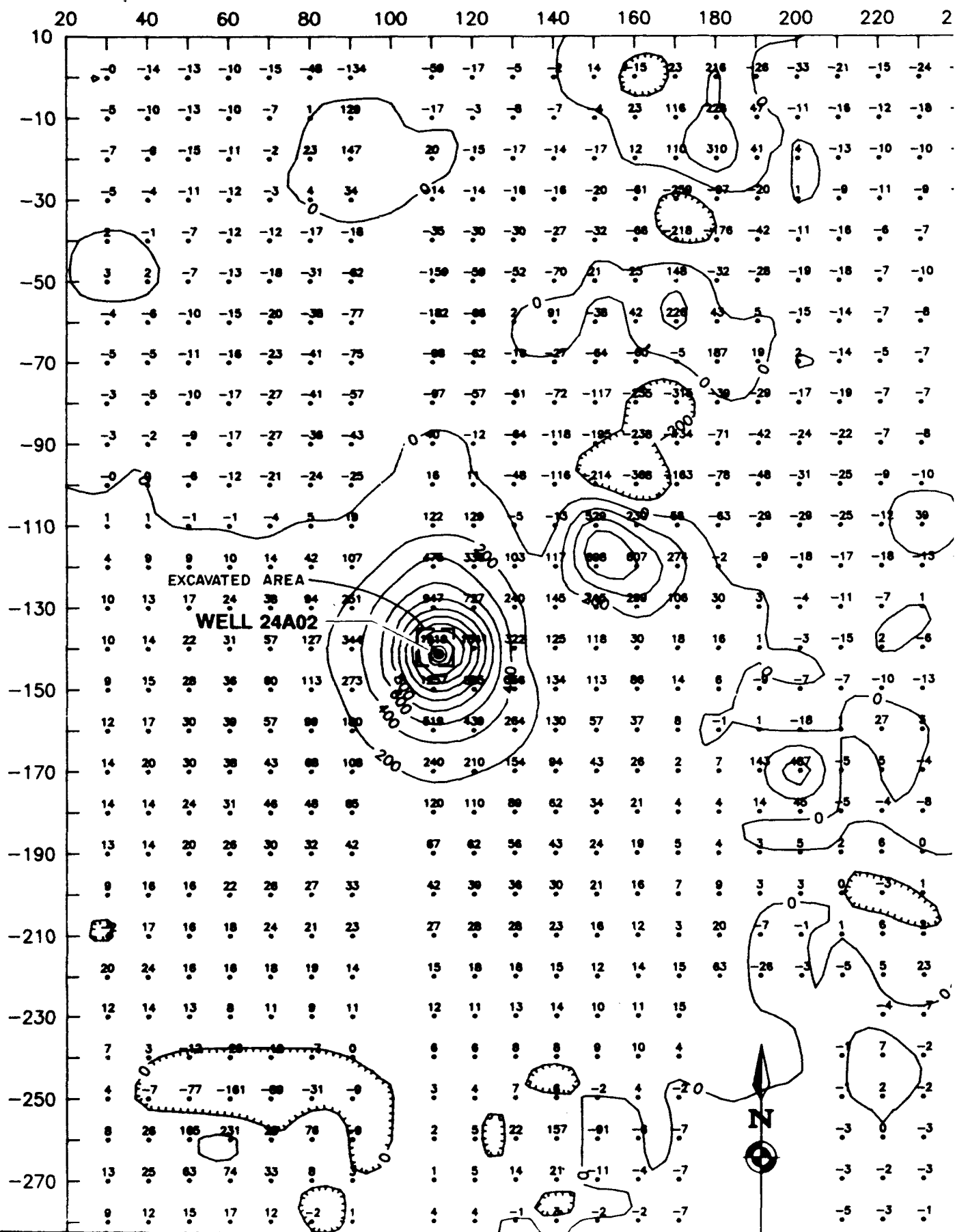
**Total Magnetic Field
 Rocky Mountain /
 Prepared By: Ge**

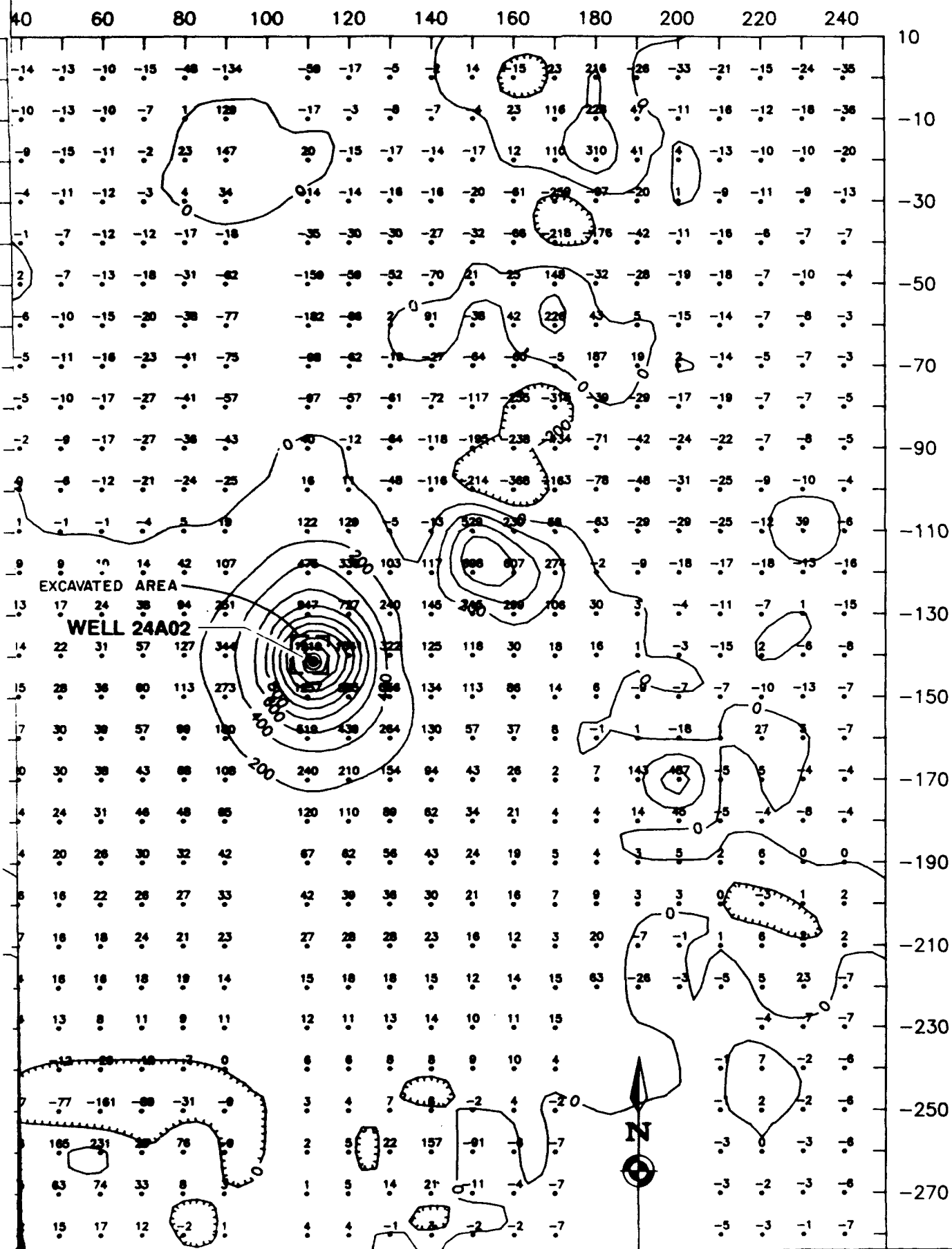


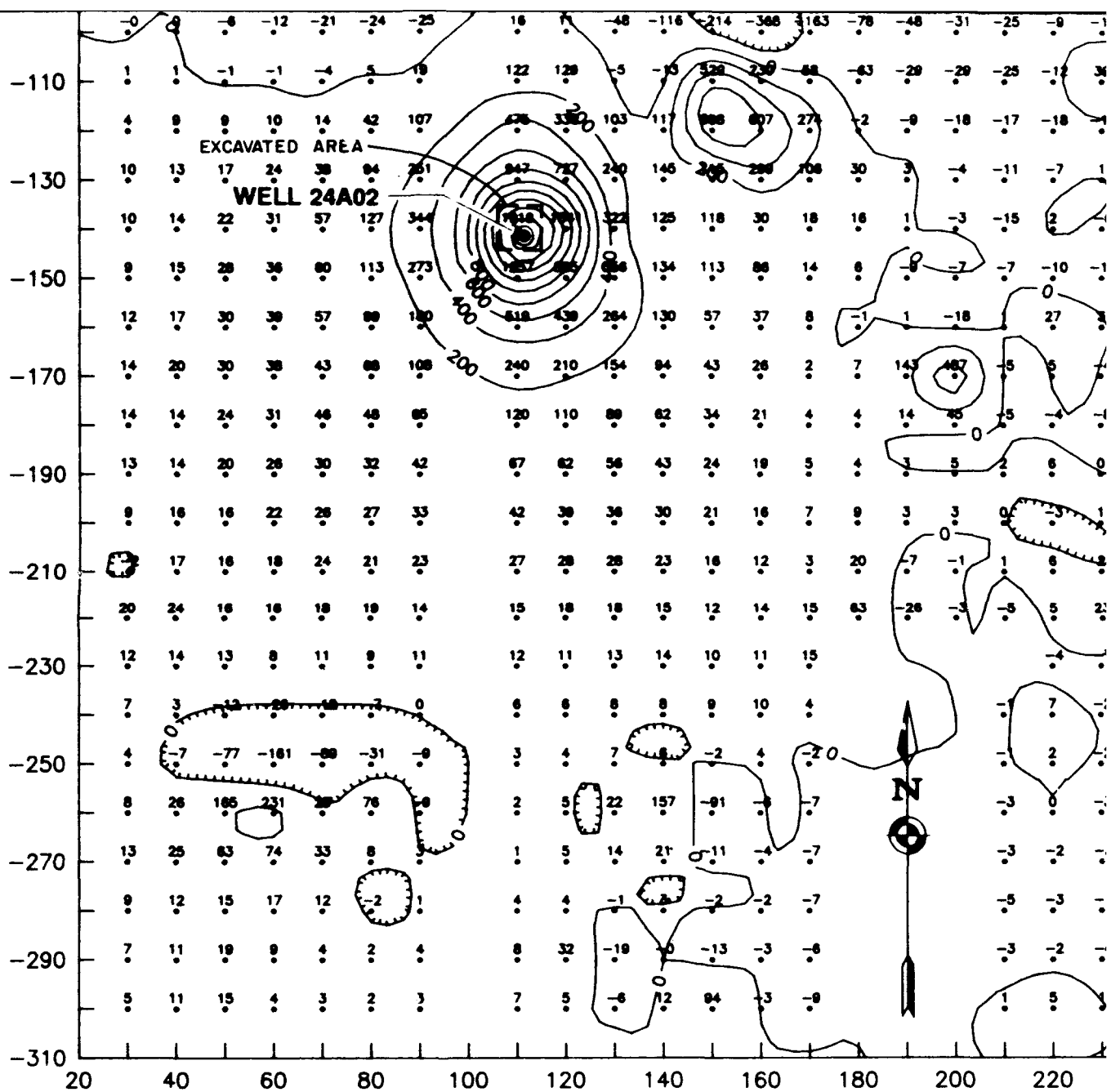
Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate No. 9

Total Magnetic Field Intensity, Grid 24A02-1
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.







EXPLANATION

17 Location and Intensity of Measurement

0 — Line of Equal Magnetic Intensity

Contour Interval = 200 Gammas (γ)

GRAPHIC SCALE IN FEET

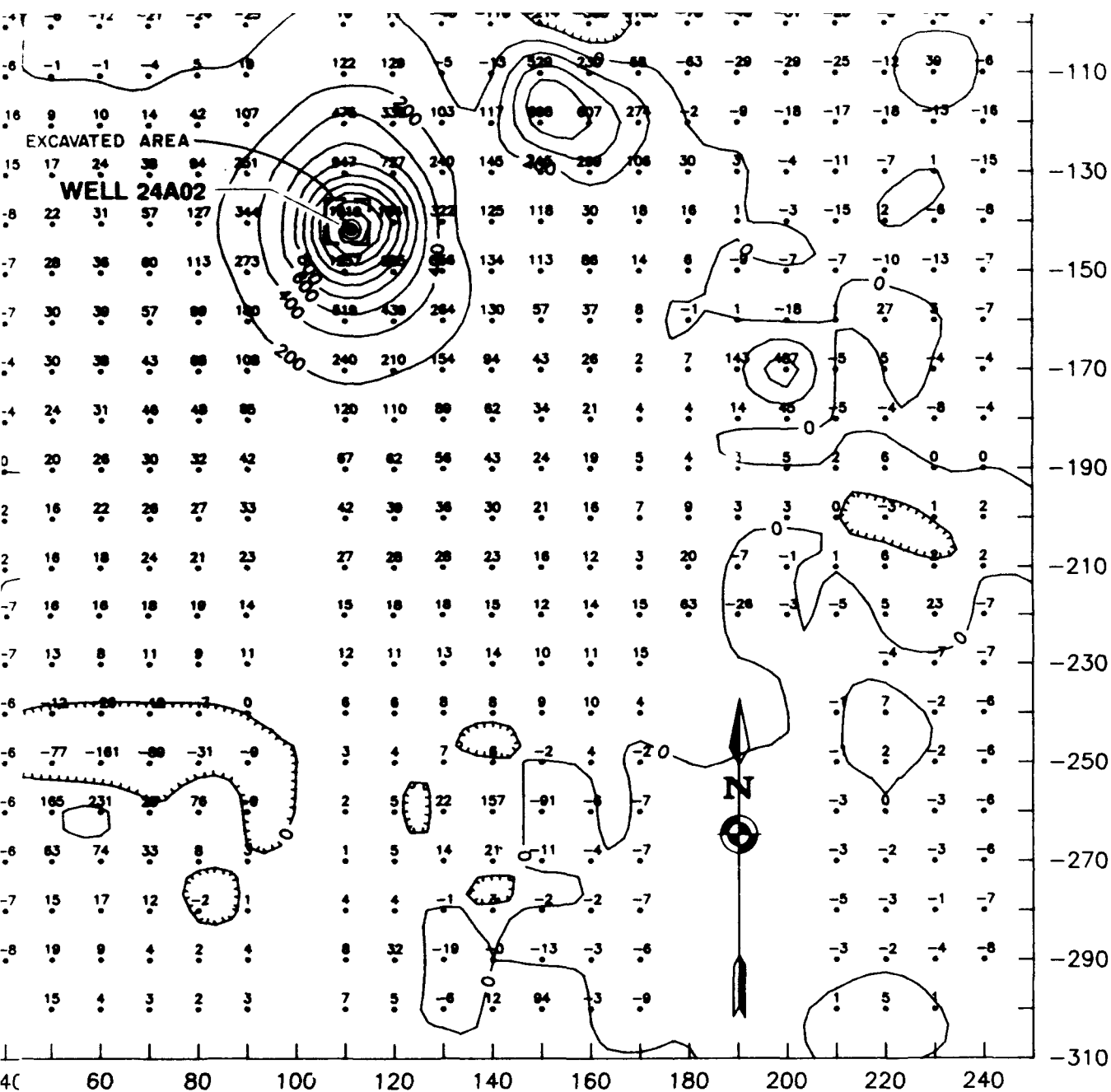


1 Inch = 30 feet

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Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate No. 10

Total Magnetic Field Intensity, Grid 24A02
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



EXPLANATION

17 Location and Intensity of Measurement

0 Line of Equal Magnetic Intensity

Contour Interval = 200 Gammas (γ)

GRAPHIC SCALE IN FEET

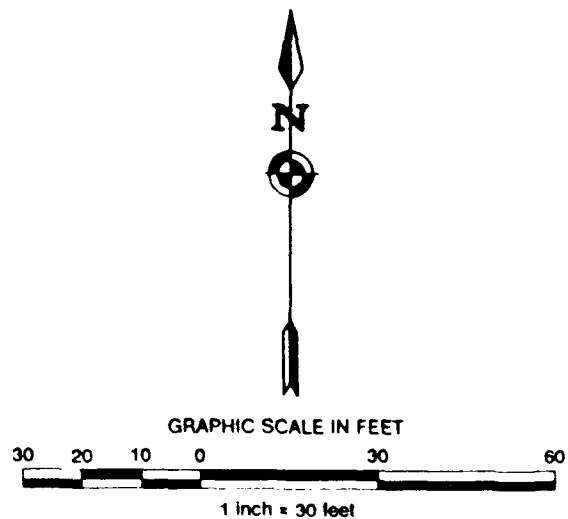
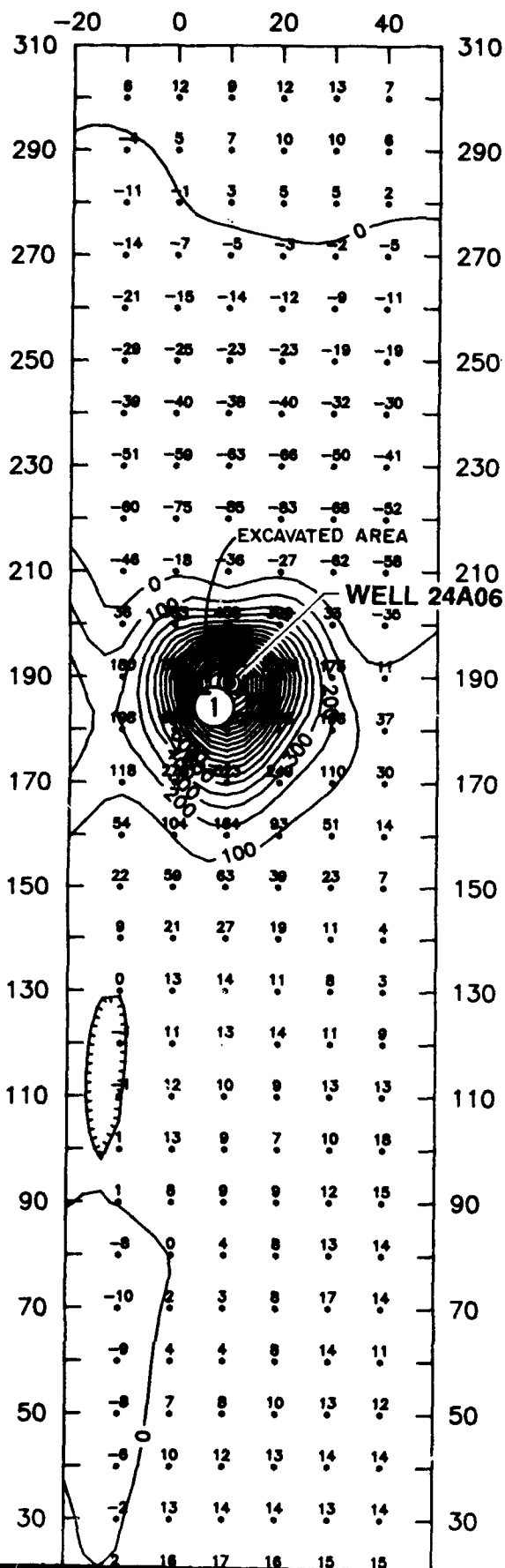
30 20 10 0 30 60

1 Inch = 30 feet

ed For:
m Manager's Office for
Mountain Arsenal Cleanup
en Proving Ground, Maryland

Plate No. 10

Total Magnetic Field Intensity, Grid 24A02-2
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



EXPLANATION

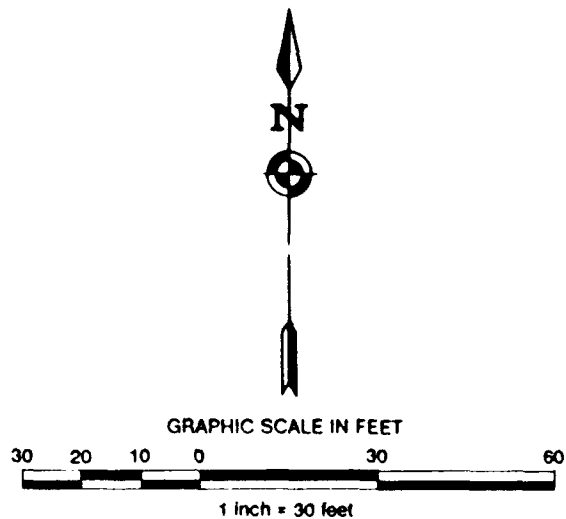
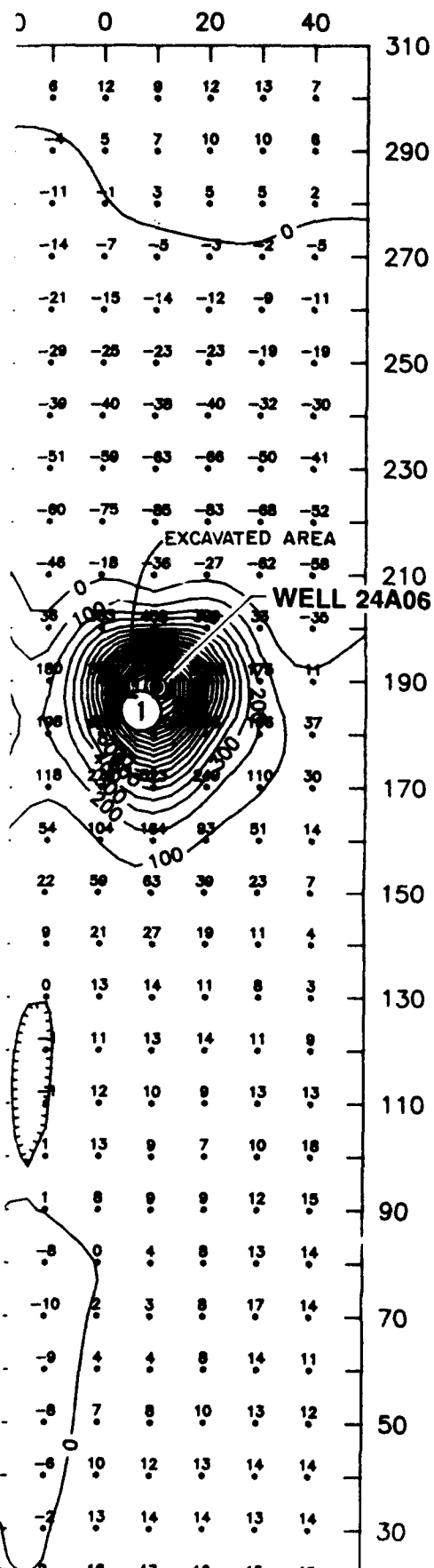
17 Location and Intensity of Measurement

0 — Line of Equal Magnetic Intensity

Contour Interval = 100 Gammas (γ)

① Slight Topographic Depression

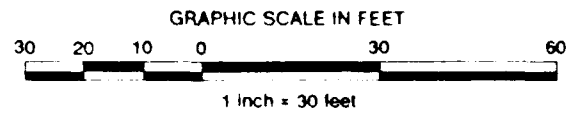
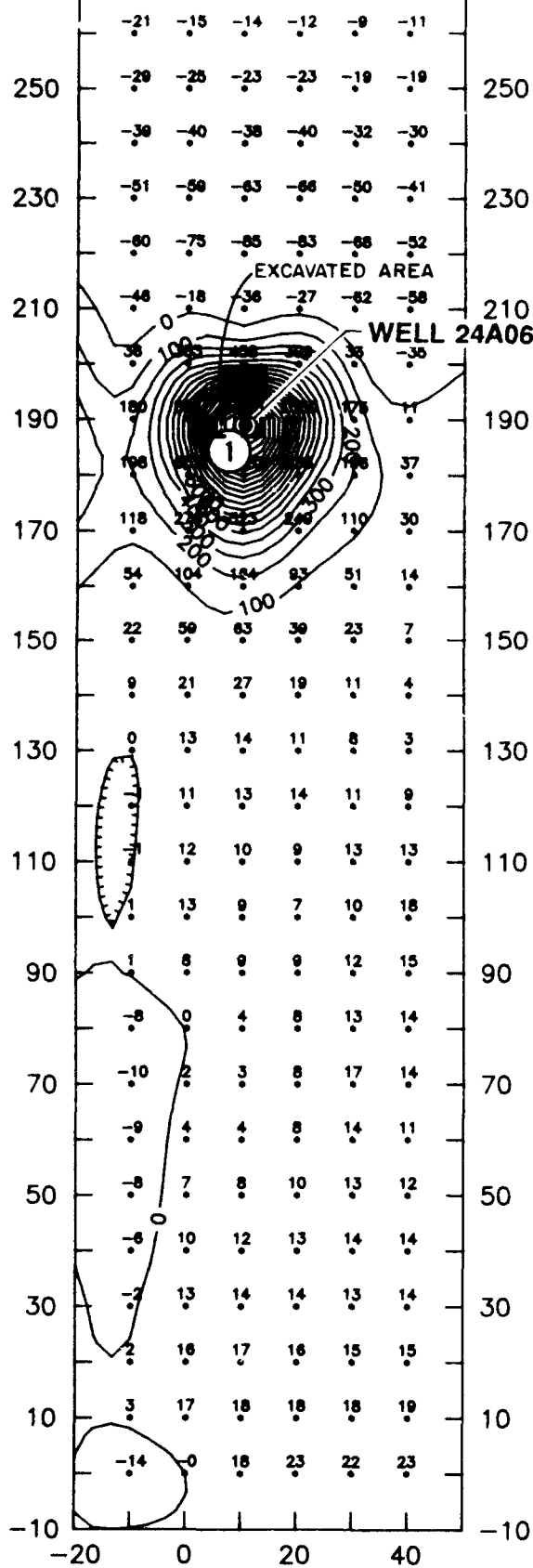
Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland



EXPLANATION

- 17 Location and Intensity of Measurement
- 0 — Line of Equal Magnetic Intensity
- Contour Interval = 100 Gammas (γ)
- ① Slight Topographic Depression

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 Aberdeen Proving Ground, Maryland



EXPLANATION

17 Location and Intensity of Measurement

0 — Line of Equal Magnetic Intensity

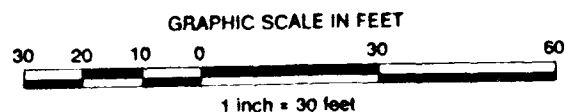
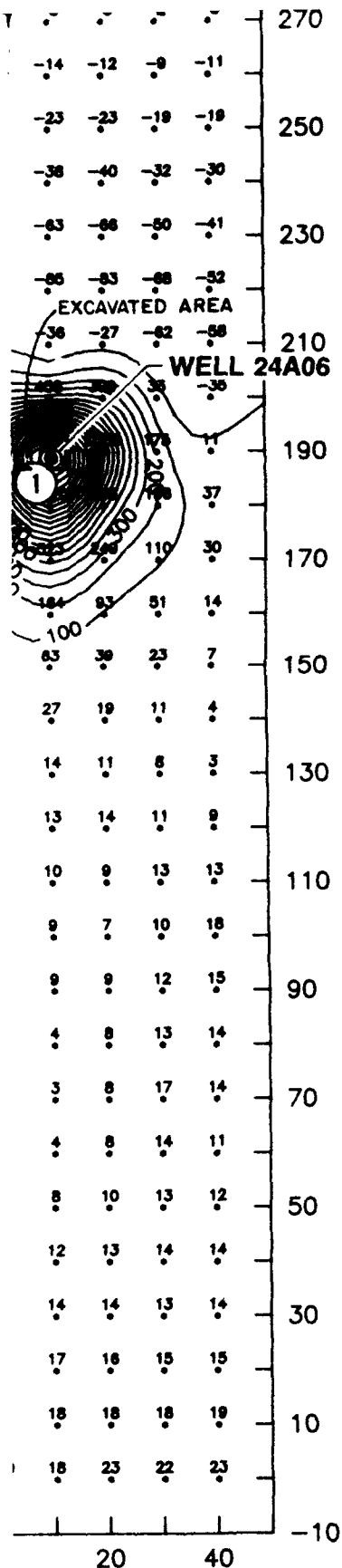
Contour Interval = 100 Gammas (γ)

① Slight Topographic Depression

Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate No. 11

Total Magnetic Field Intensity, Grid 24A06
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



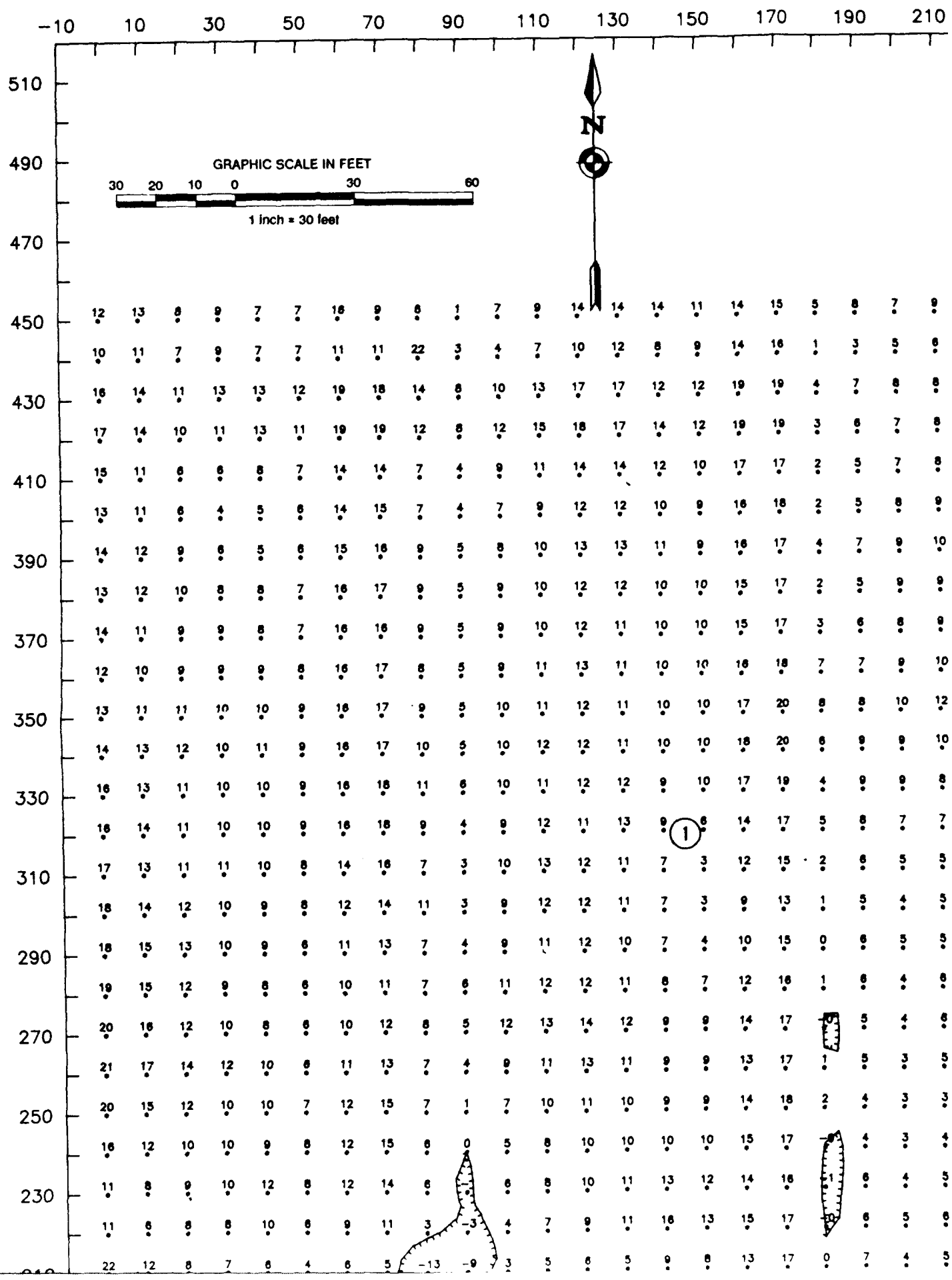
EXPLANATION

- 17 Location and Intensity of Measurement
- 0 - - Line of Equal Magnetic Intensity
- Contour Interval = 100 Gammas (γ)
- ① Slight Topographic Depression

Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

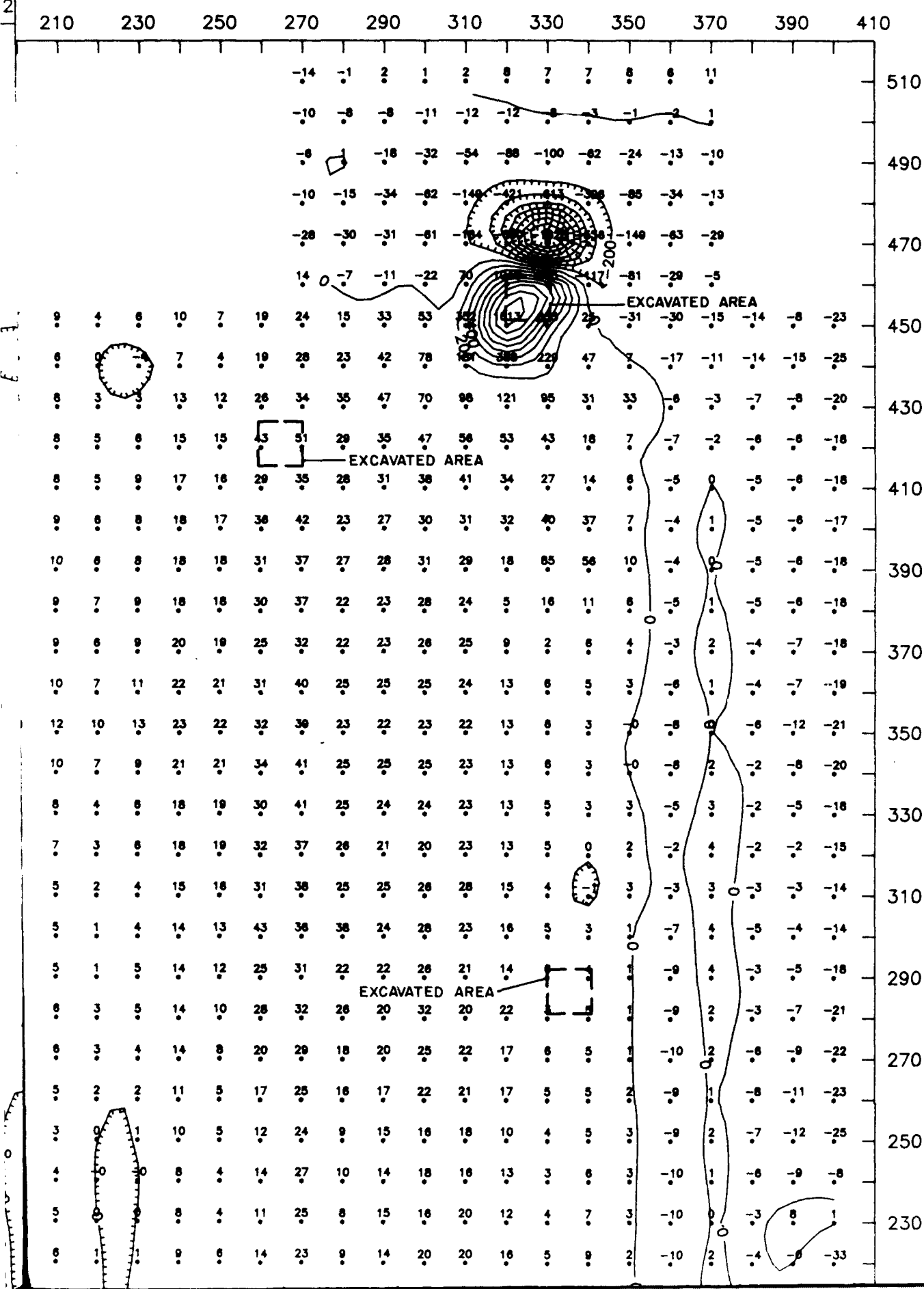
Plate No. 11

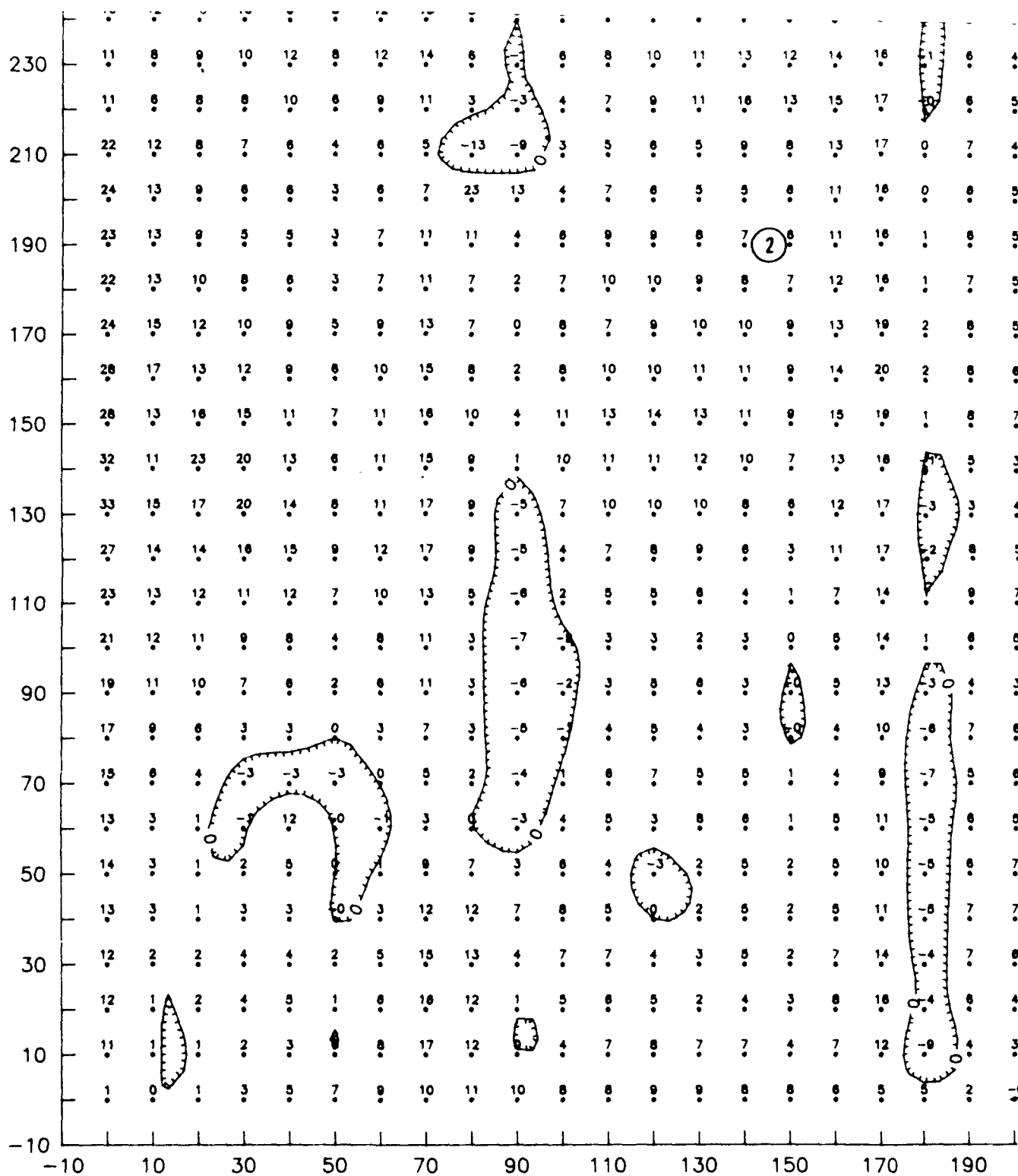
Total Magnetic Field Intensity, Grid 24A06
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



2

2





EXPLANATION

17 Location and Intensity of Measurement

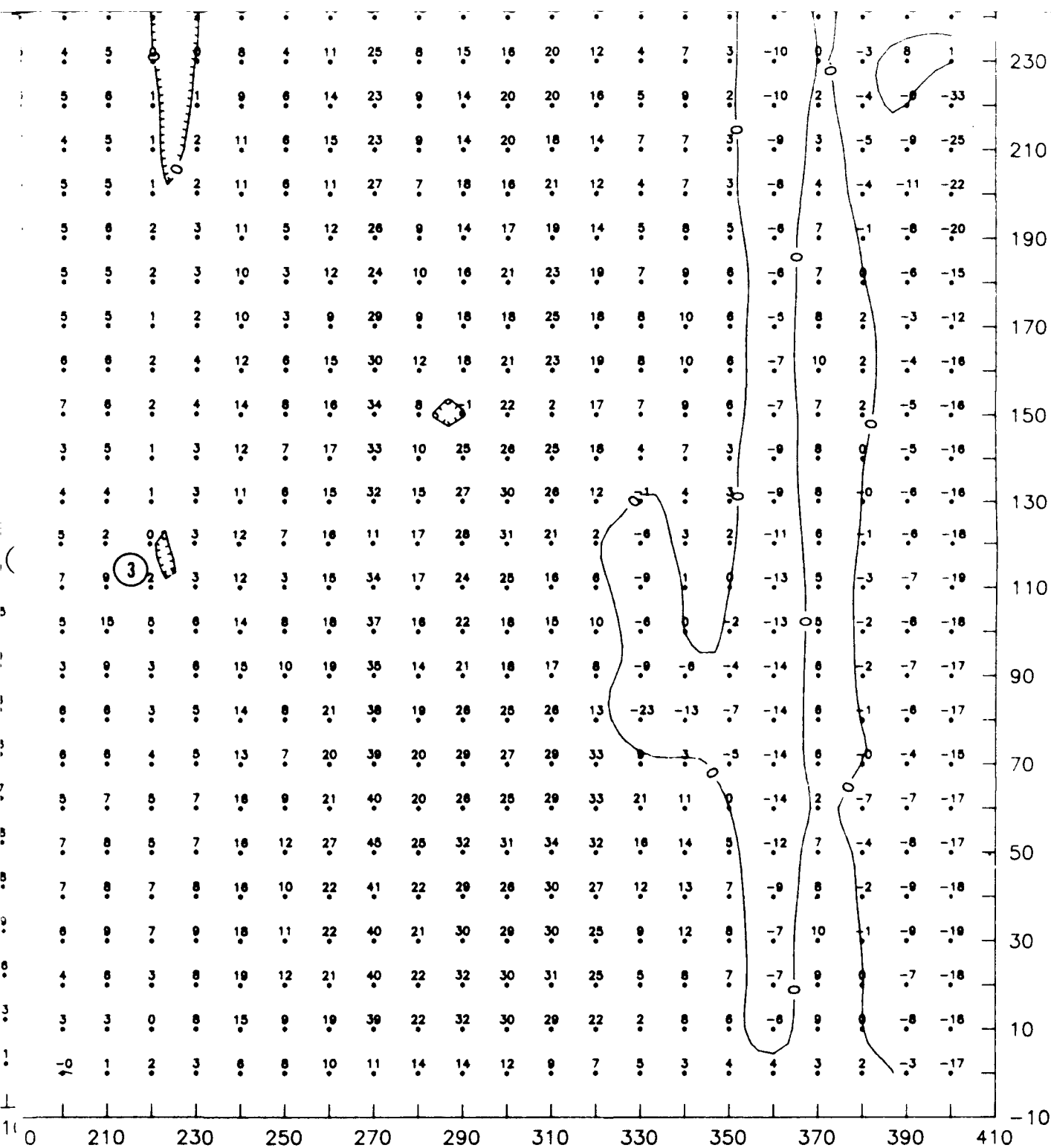
Contour Interval = 200 Gammas (γ)

0 — Line of Equal Magnetic Intensity

① Well 25A01
Reported

② Well 25A02
Reported

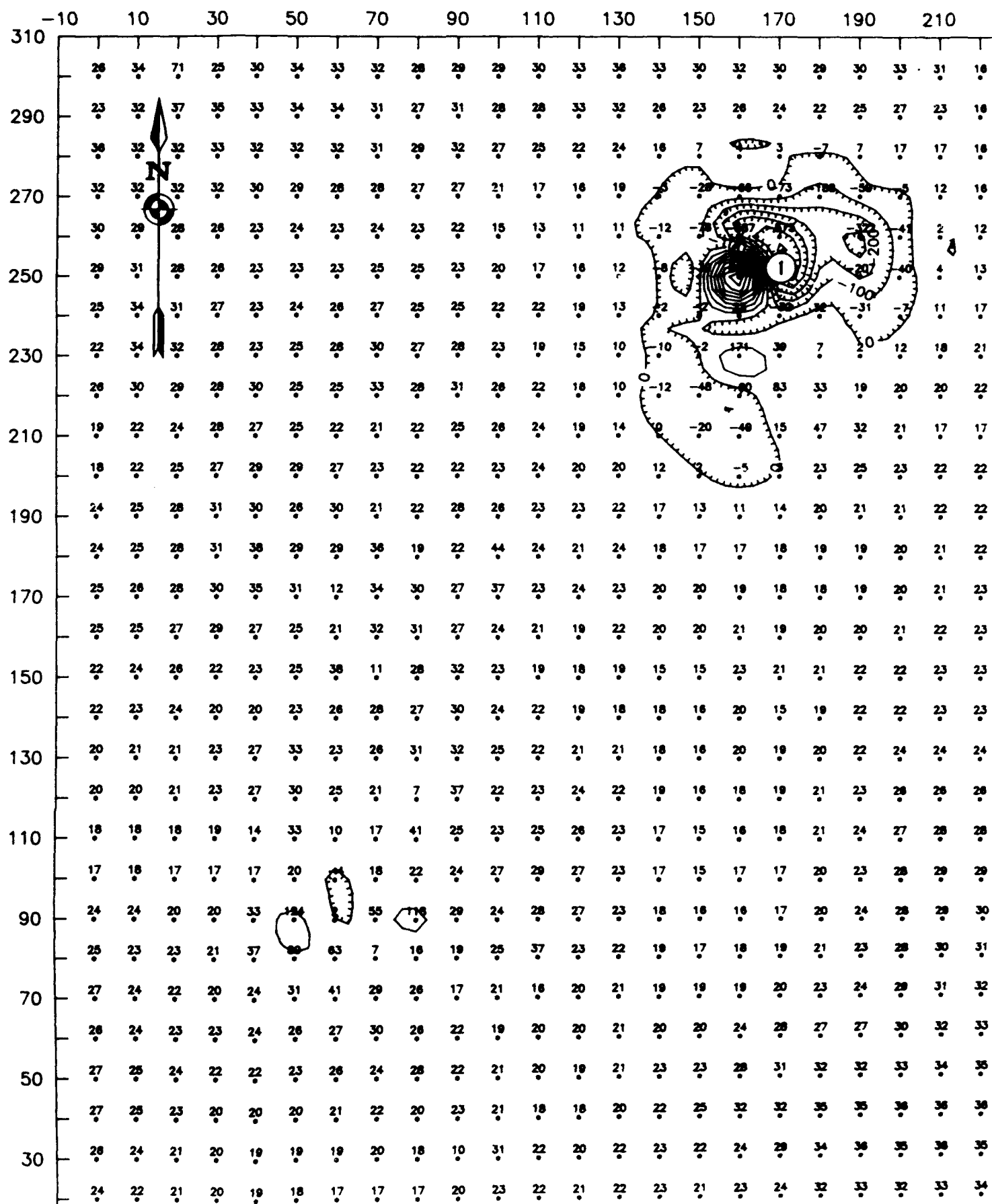
③ Well 25A03
Reported

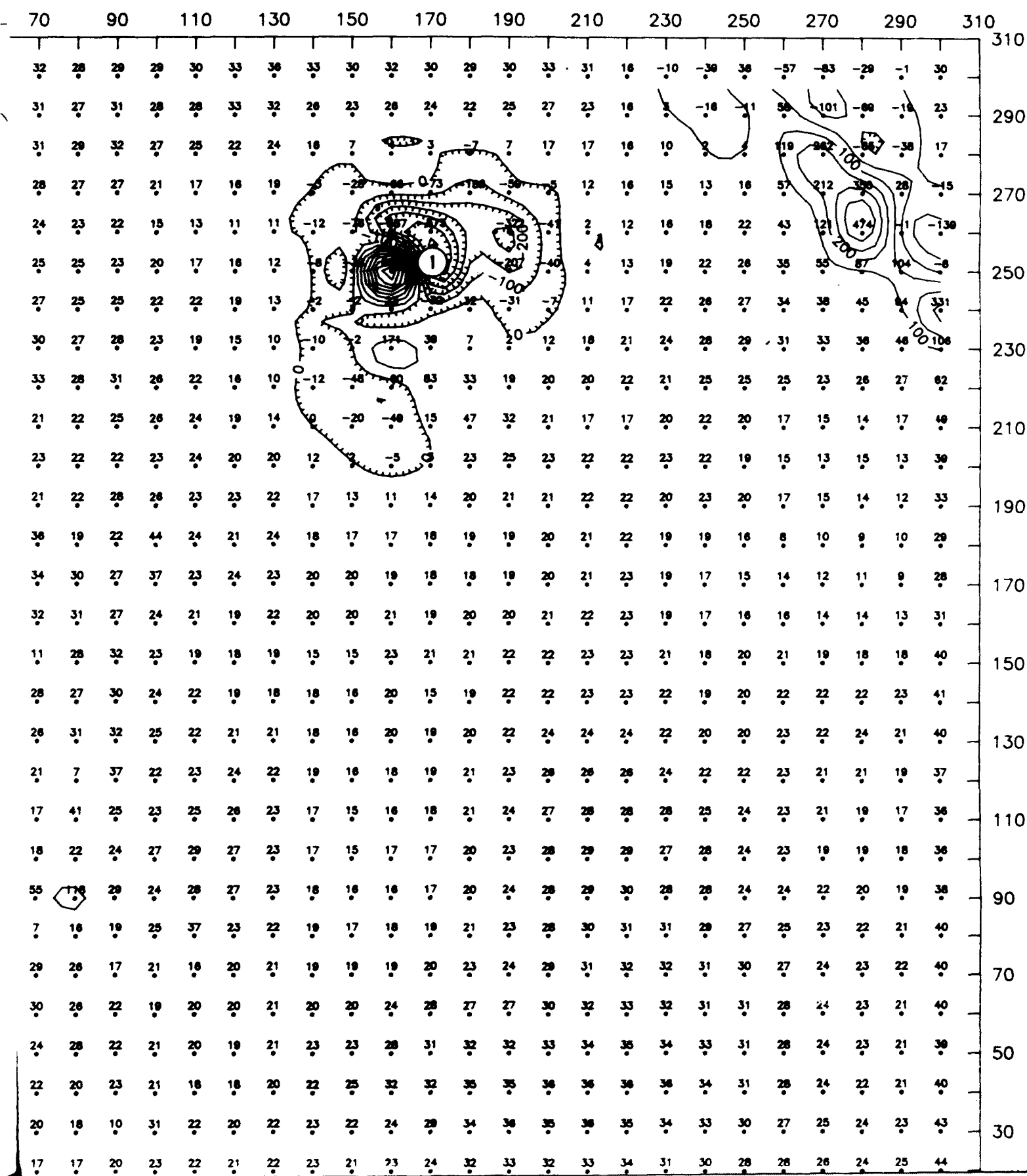


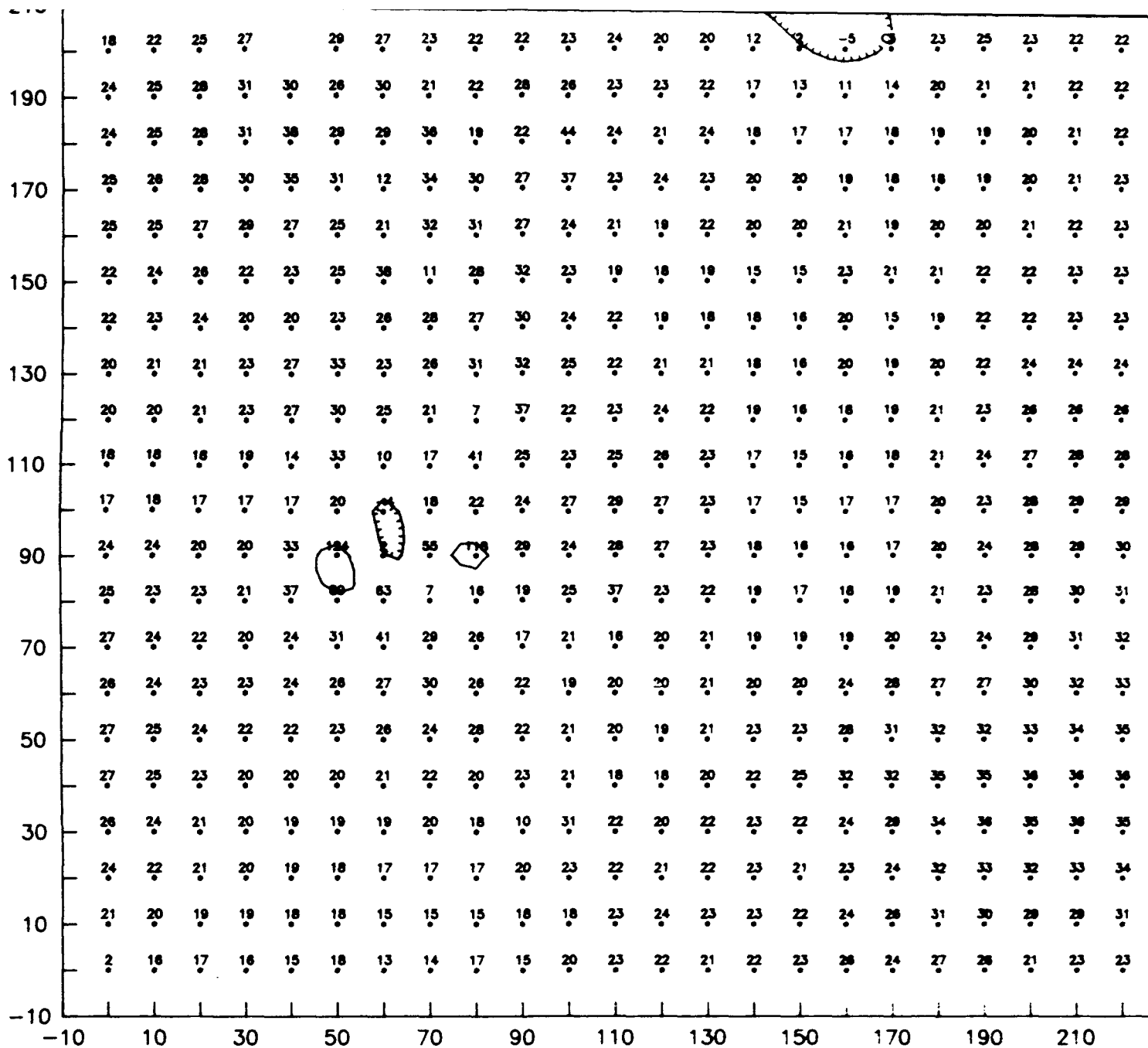
Prepared For:
 Program Manager's Office for
 Rocky Mountain Arsenal Cleanup
 Aberdeen Proving Ground, Maryland

Plate No. 12

Total Magnetic Field Intensity,
 Grids 25A01-25A03
 Rocky Mountain Arsenal, Task 37
 Prepared By: Geraghty & Miller, Inc.







EXPLANATION

17 Location and Intensity of Measurement

10 Line of Equal Magnetic Intensity

Contour Interval = 100 Gammas (γ)

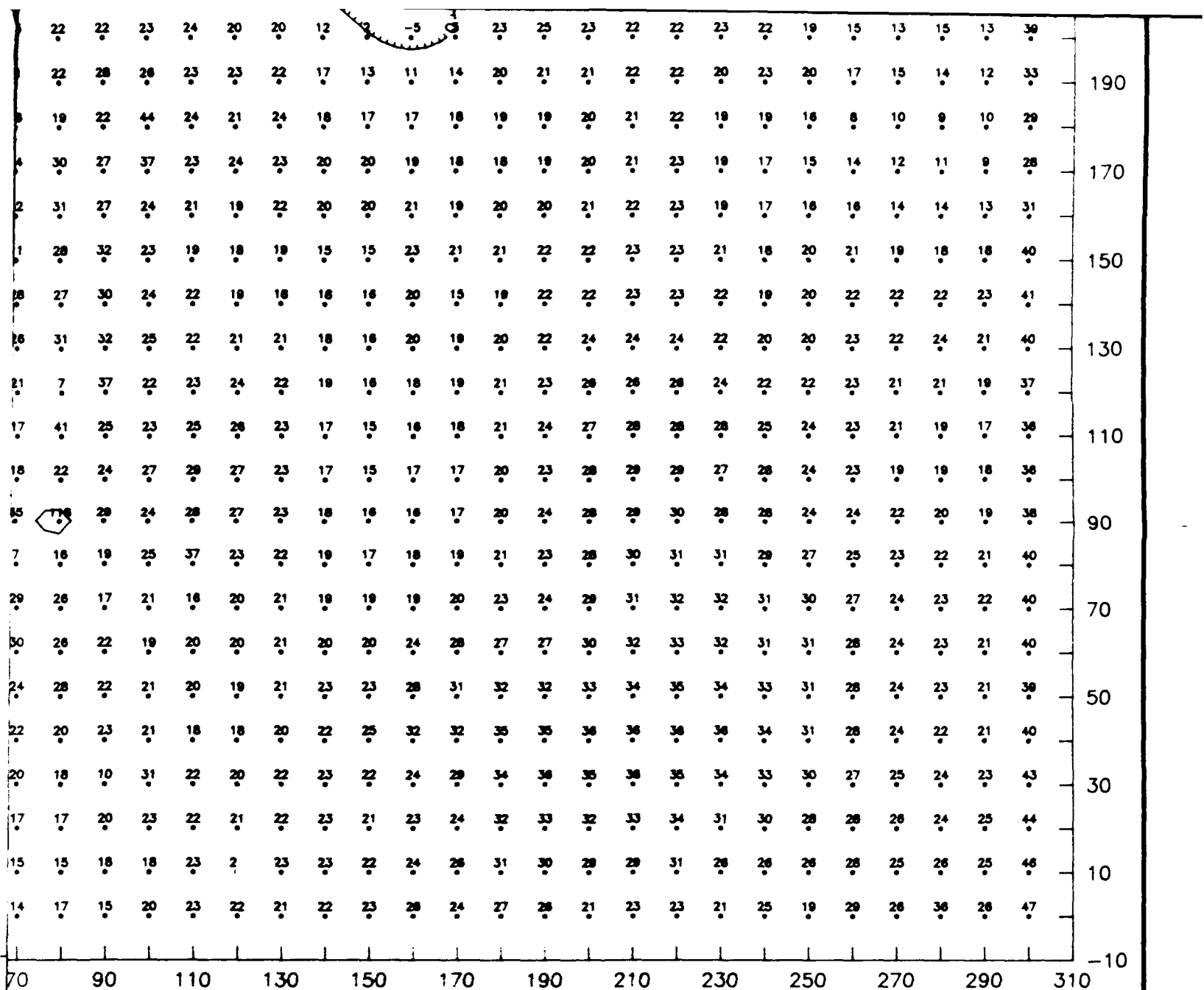
1 Monitoring Well with 8 in. Steel Protective Casing
 4-55 gal. Drums 10 ft. to West and
 8-55 gal. Drums 10 ft. to East

30 20 10

Prepared For:
 Program Manager's Office for
 Rocky Mountain Arsenal Cleanup
 Aberdeen Proving Ground, Maryland

Plate No. 13

Total Magnetic Field
 Rocky Mountain Ar
 Prepared By: Gera



EXPLANATION

①

Monitoring Well with 8 in. Steel Protective Casing
4-55 gal. Drums 10 ft. to West and
8-55 gal. Drums 10 ft. to East

GRAPHIC SCALE IN FEET



1 inch = 30 feet

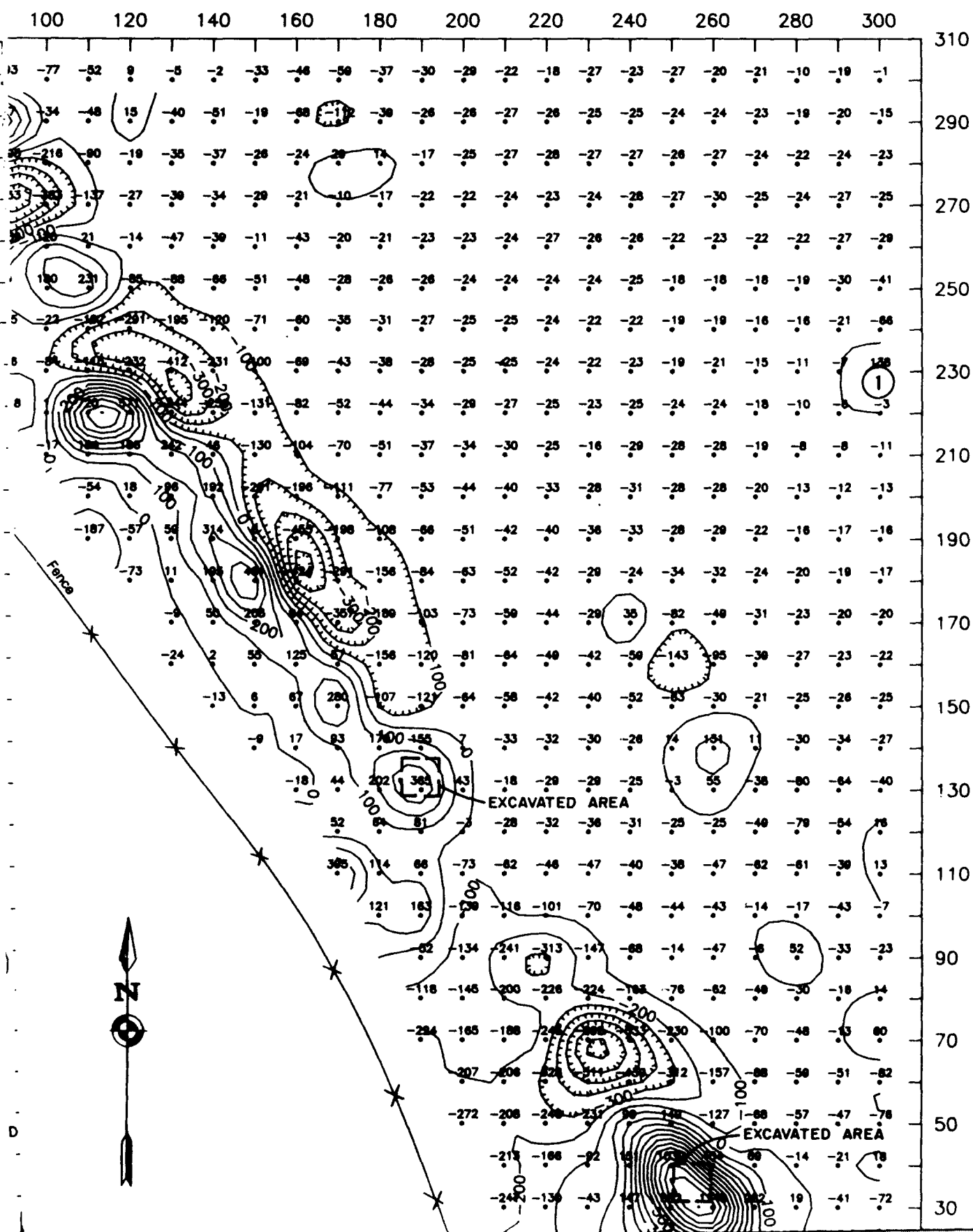
Plate No. 13

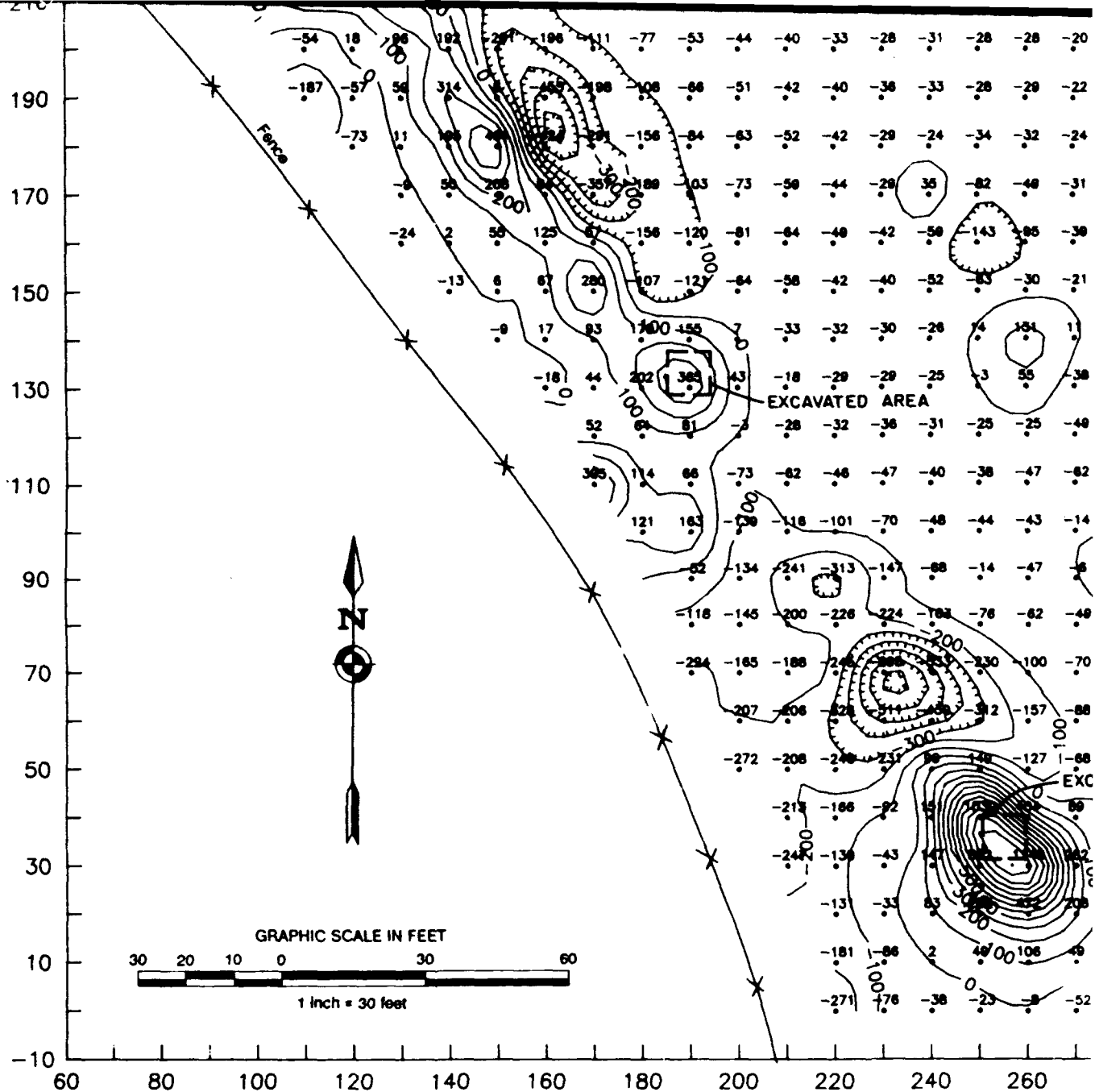
Total Magnetic Field Intensity, Grid 26A02
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.

er's Office for
Arsenal Cleanup
Ground, Maryland

This topographic map of Tell Fara includes a grid of spot heights and contour lines. The map is oriented with North at the top, indicated by a compass rose. A diagonal line with cross-ticks, labeled 'Fence', runs from the upper left towards the bottom right. The 'EXCAVATED AREA' is marked with a rectangle in the lower right quadrant. Contour lines are labeled with values such as 100, 200, 300, and 400. The grid of spot heights consists of numbers placed at regular intervals across the map, ranging from -118 to 365. The map is framed by a coordinate grid with latitude (30 to 310) and longitude (60 to 280) markings.







EXPLANATION

- 17 Location and Intensity of Measurement
- 0- Line of Equal Magnetic Intensity

Contour Interval = 100 Gammas (γ)

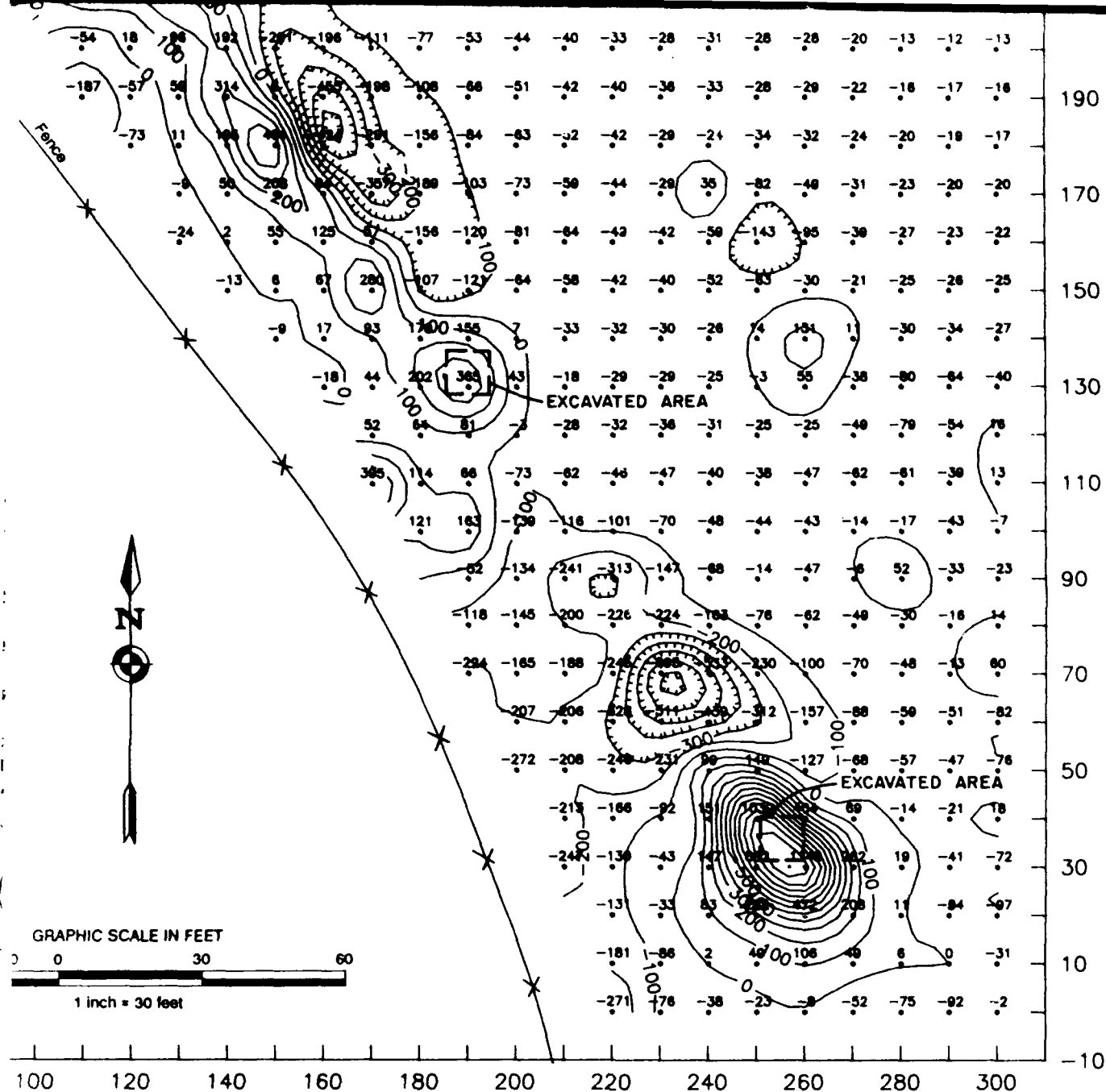
① Bench Mark F-13

② LF

Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate No. 14

Total Magnetic Field Intensity, Gr
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller,



EXPLANATION

ation and Intensity of Measurement

Contour Interval = 100 Gammas (γ)

ie of Equal Magnetic Intensity

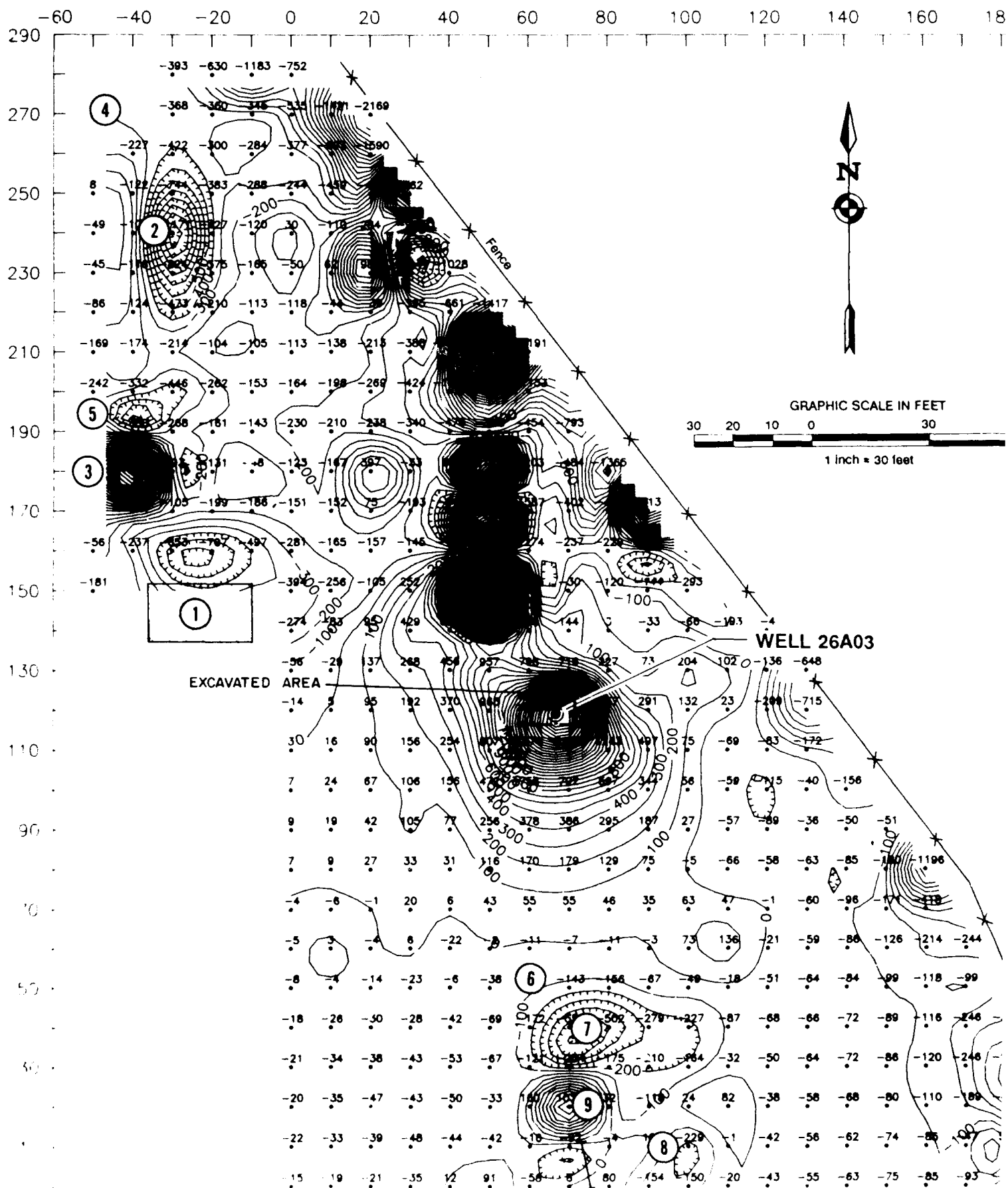
① Bench Mark F-13

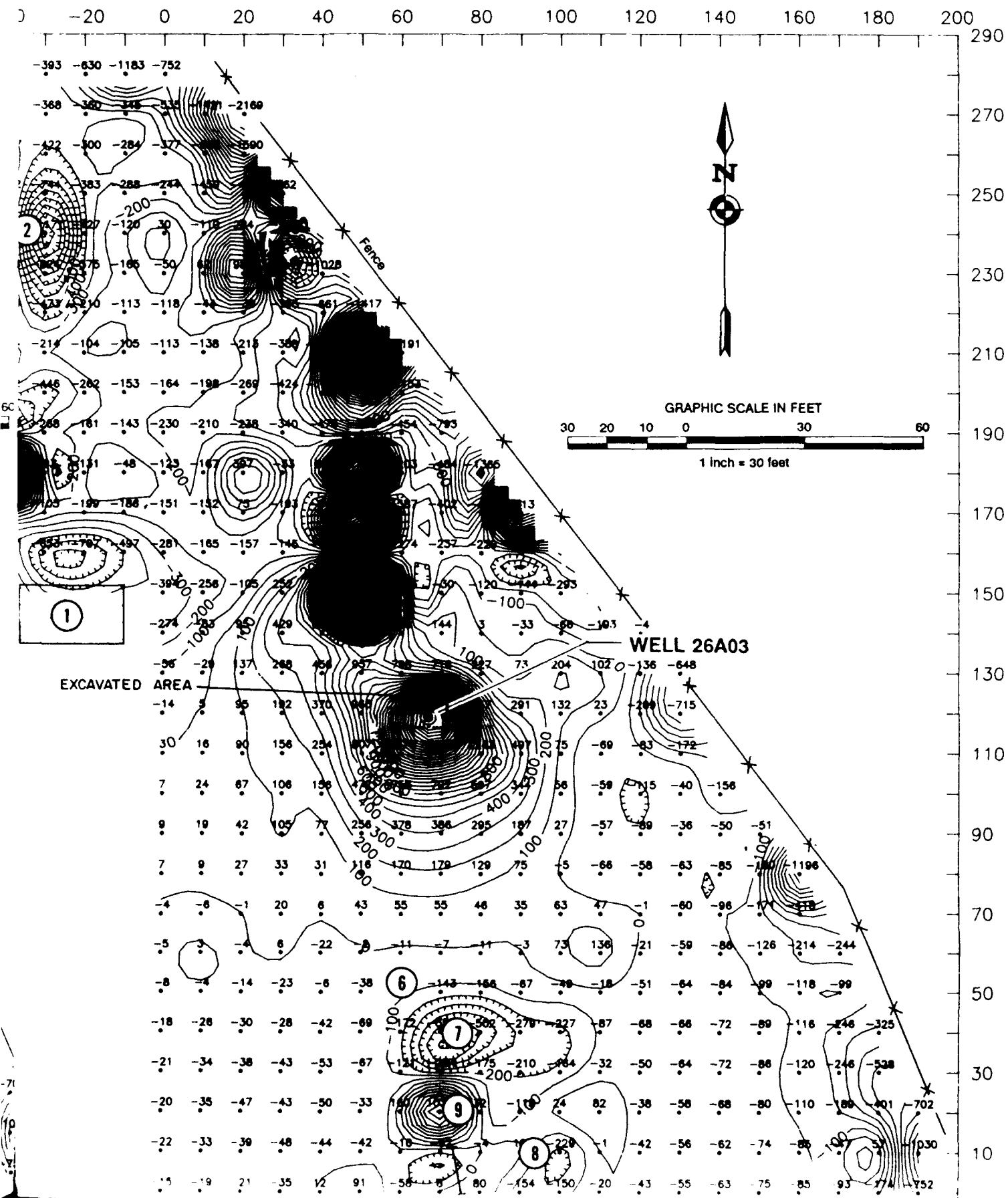
② LP Gas Tank

For:
Manager's Office for
Mountain Arsenal Cleanup
Proving Ground, Maryland

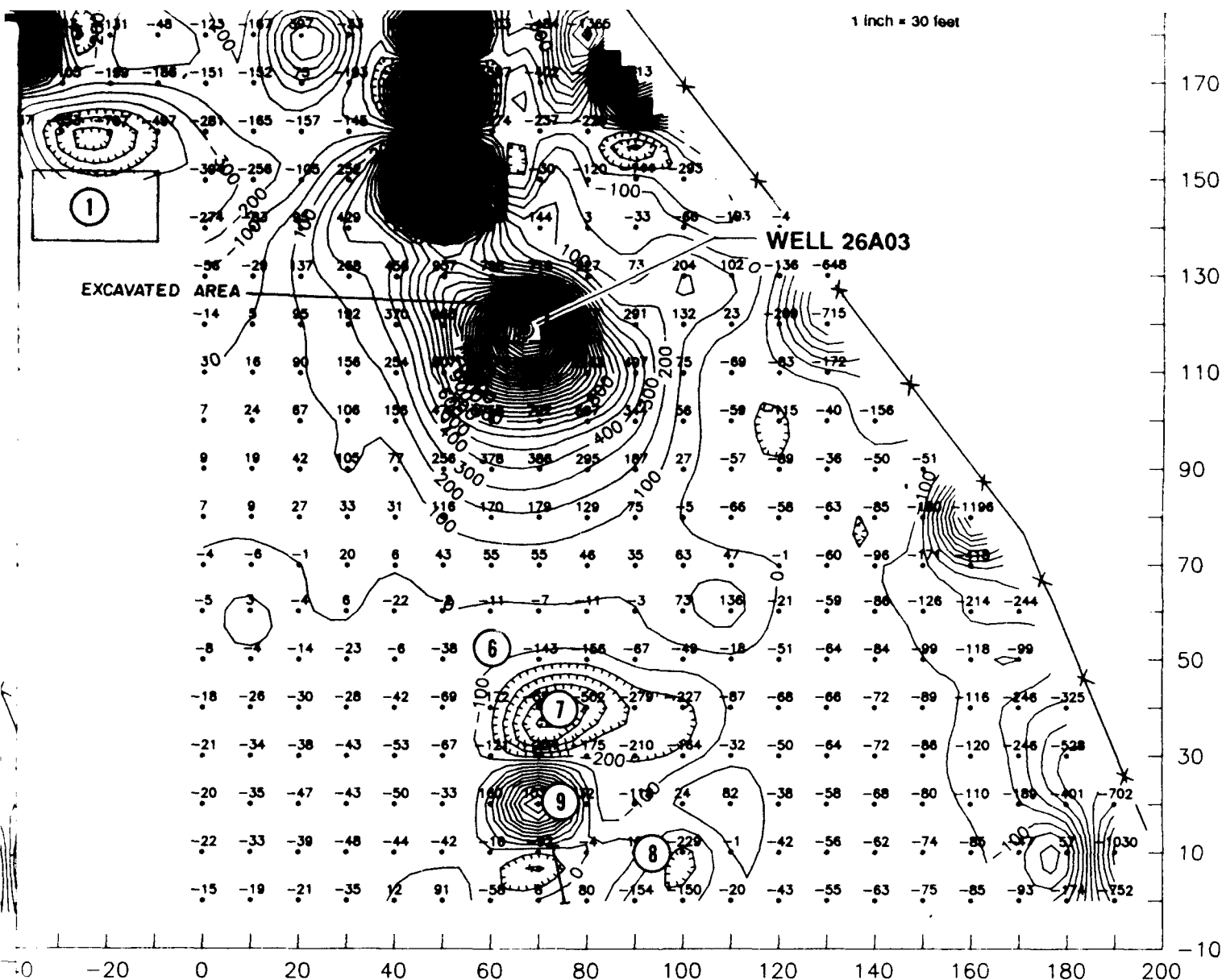
Plate No. 14

Total Magnetic Field Intensity, Grid 26A03-1
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.





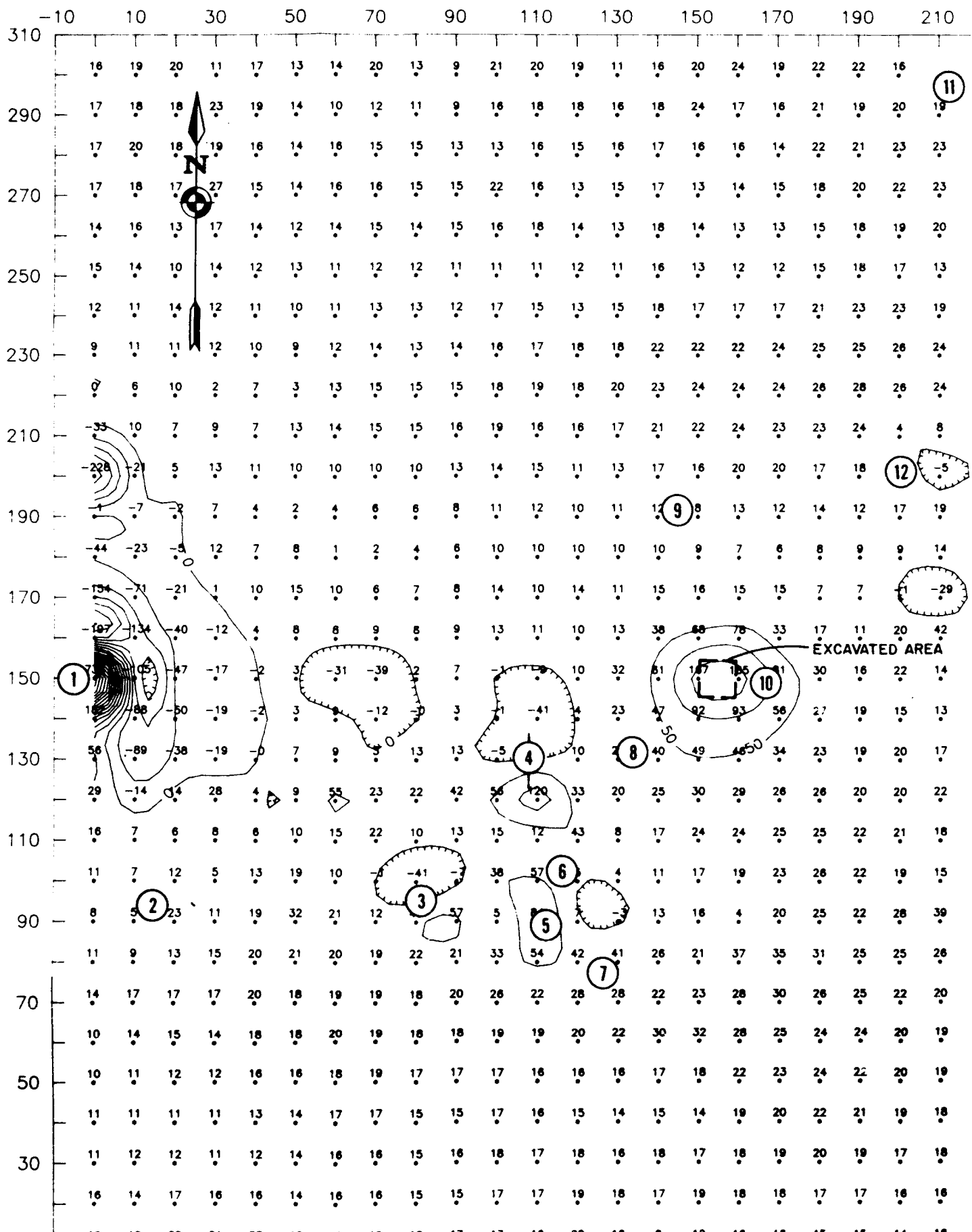
1 inch = 30 feet

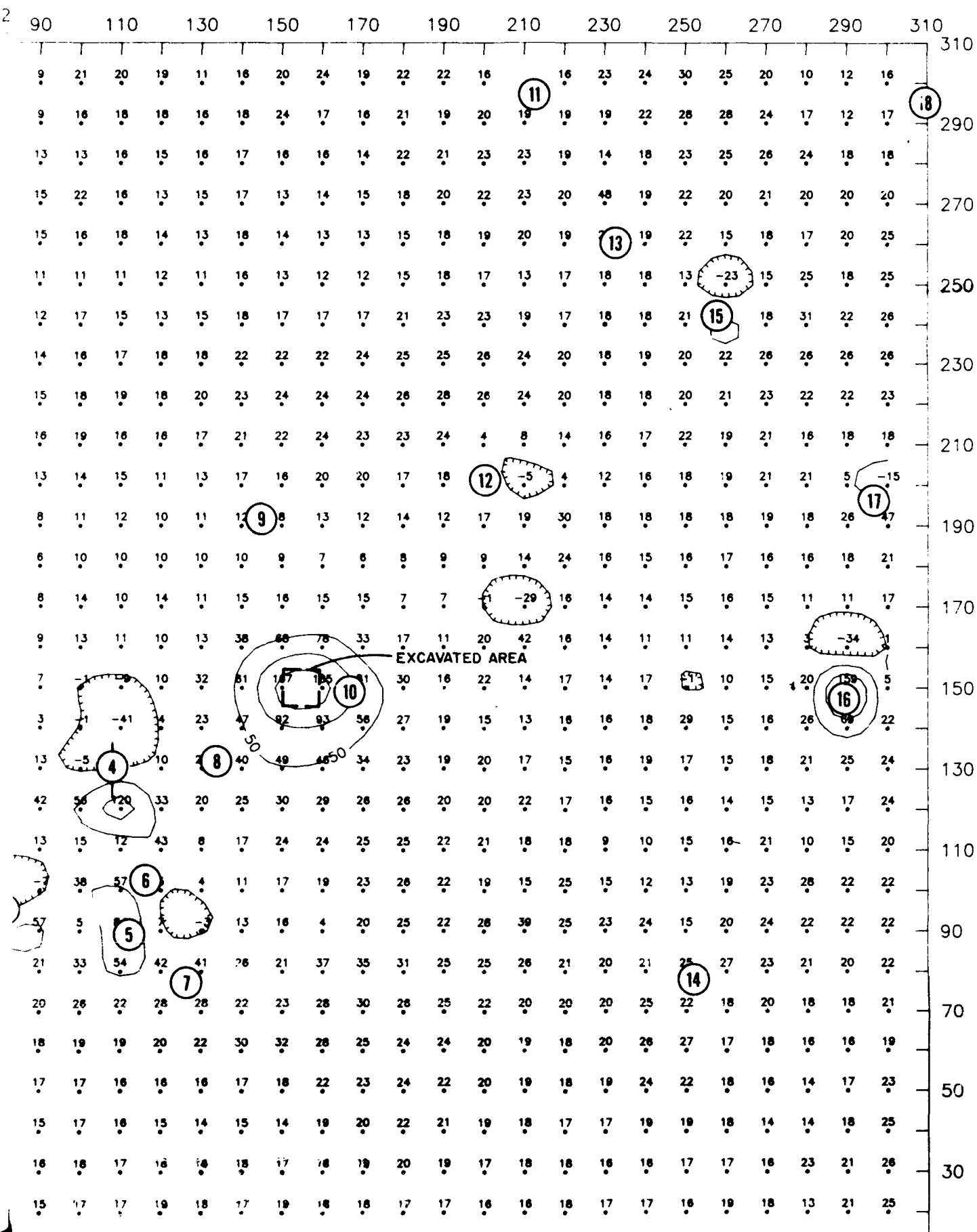


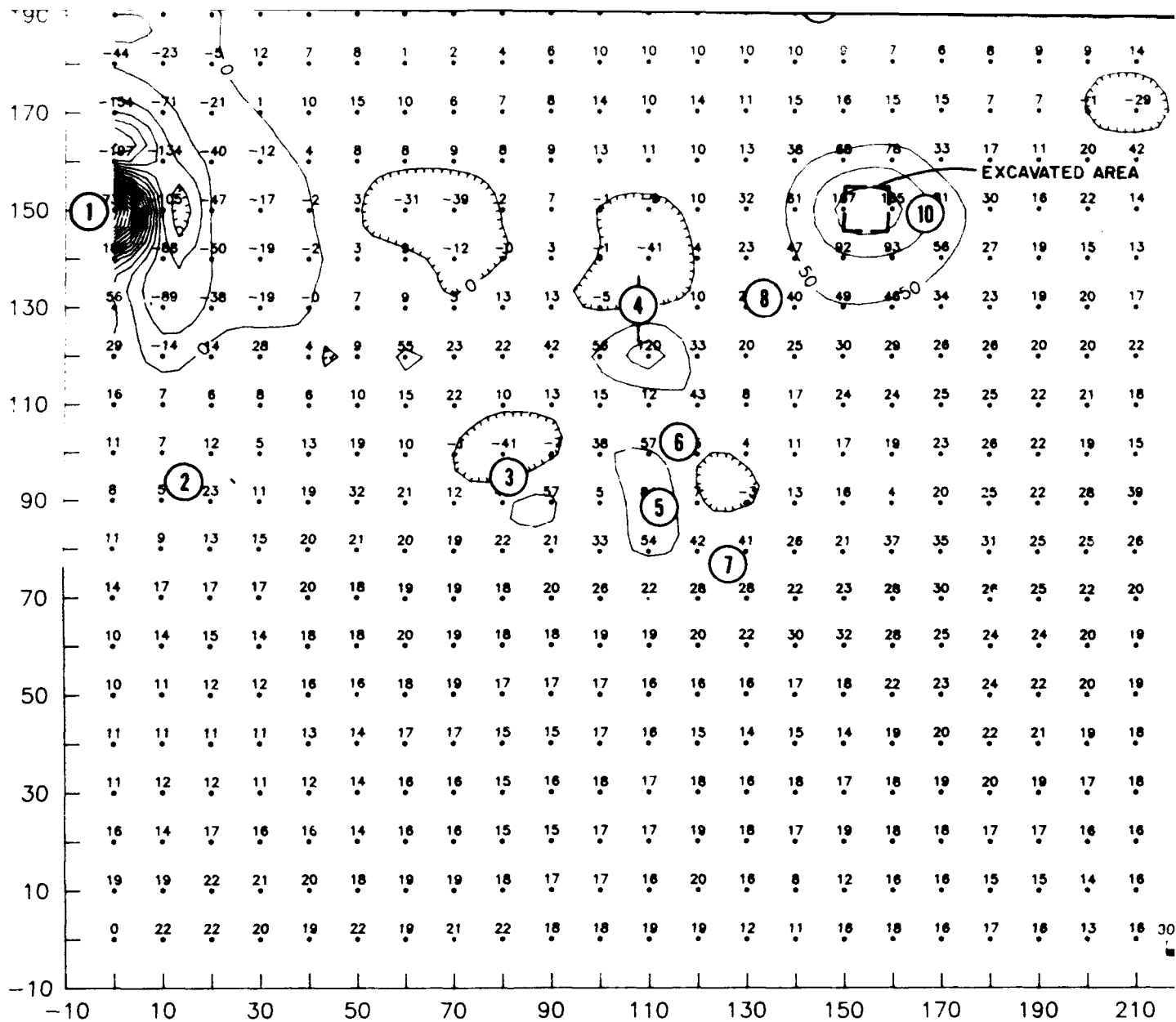
Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Pardue Proving Ground, Maryland

Plate No. 15

Total Magnetic Field Intensity, Grid 26A03-2
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.







EXPLANATION

17 Location and Intensity of Measurement

0 — Line of Equal Magnetic Intensity

Contour Interval = 50 Gammas (γ)

1 Well 30A01

2 Barbed Wire

3 Barbed Wire

4 Barbed Wire

5 Barbed Wire and Concrete

6 Barbed Wire

7 Barbed Wire

8 Section of 8 in. Galvanized Pipe, 2 ft. long

9 Barbed Wire

10 Wagon

11 Metal F

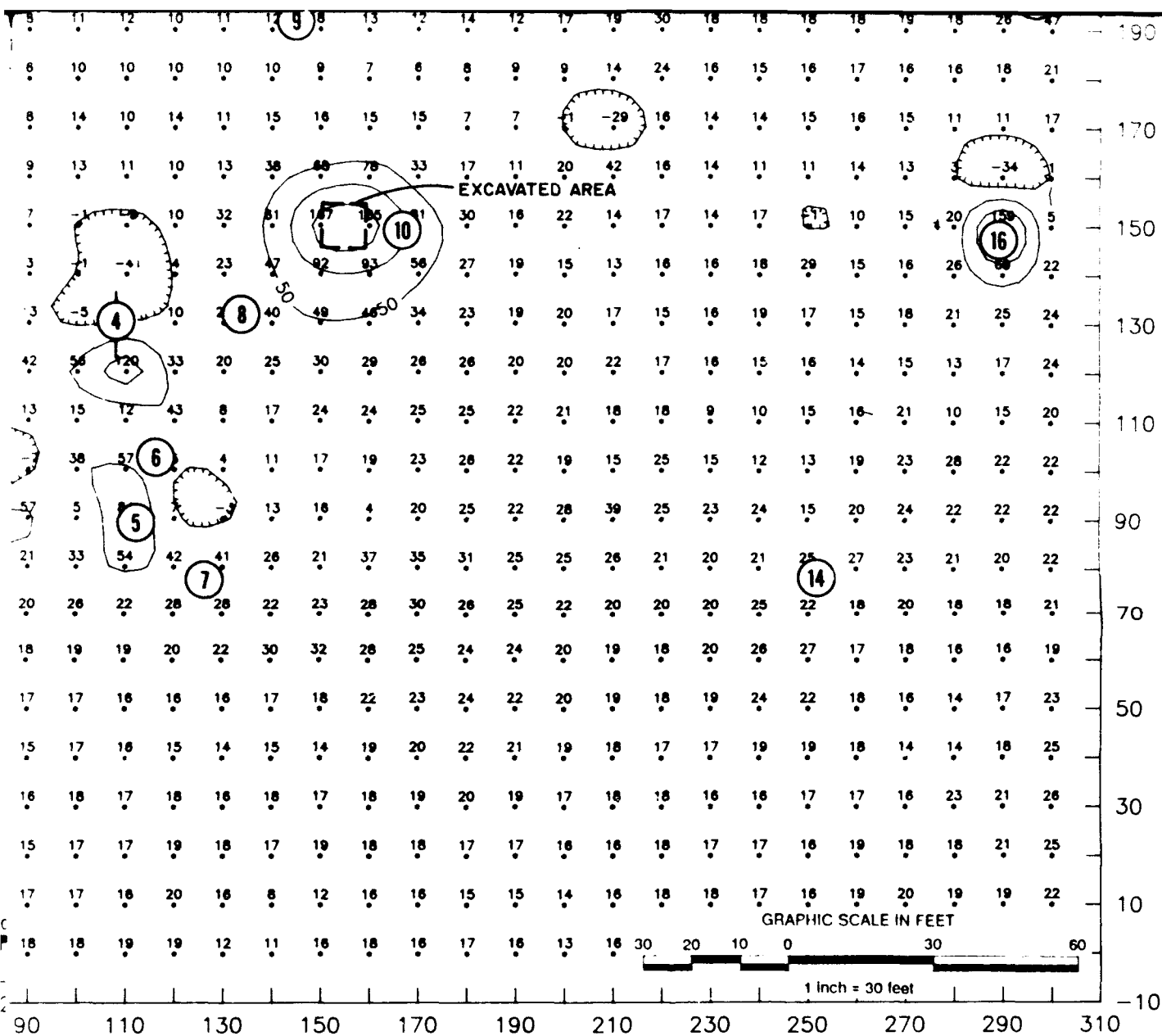
12 Metal F

13 Steel C 1 ft. x

Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate No. 16

Total Magnetic F
Rocky Mountain
Prepared By: Ge



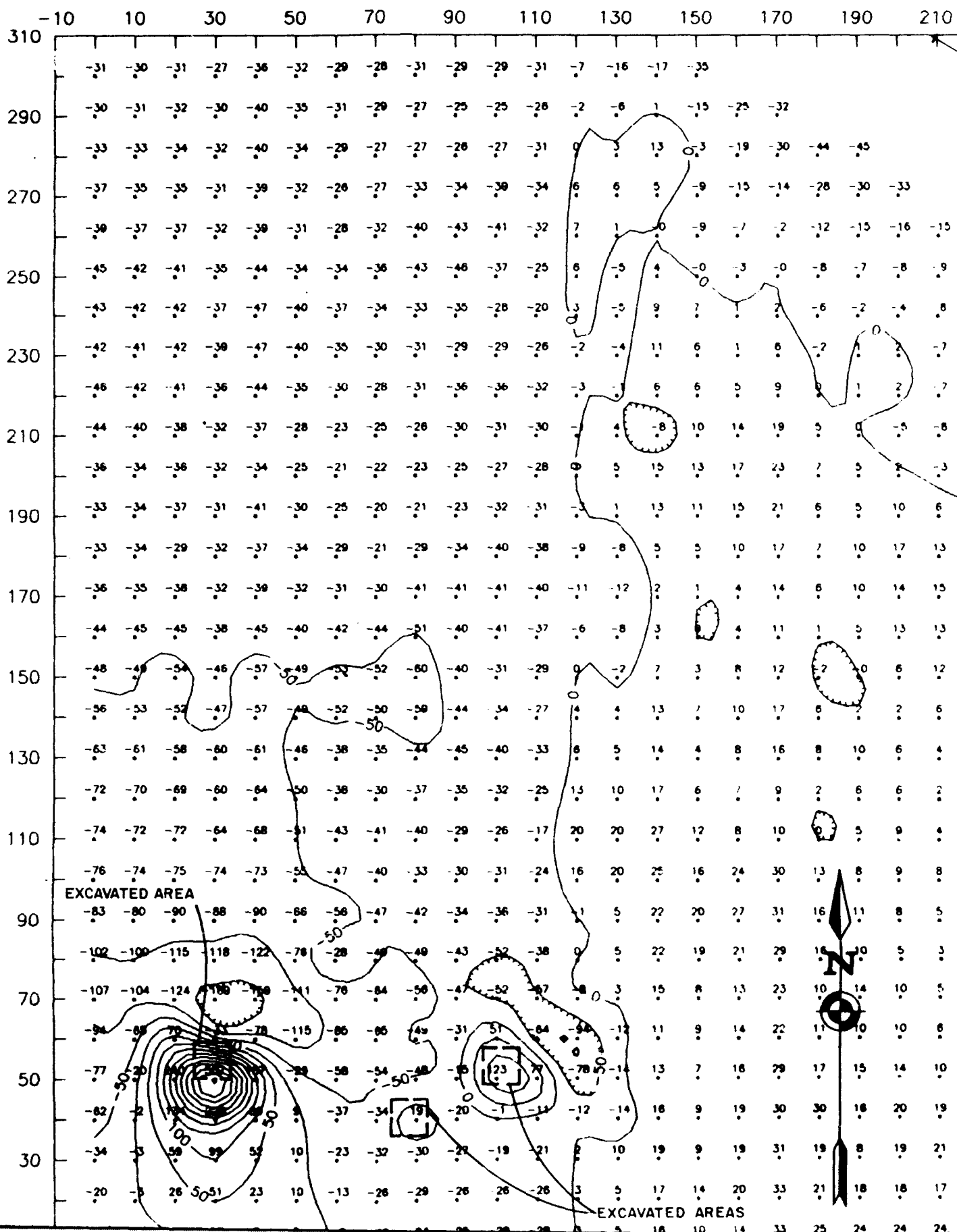
EXPLANATION

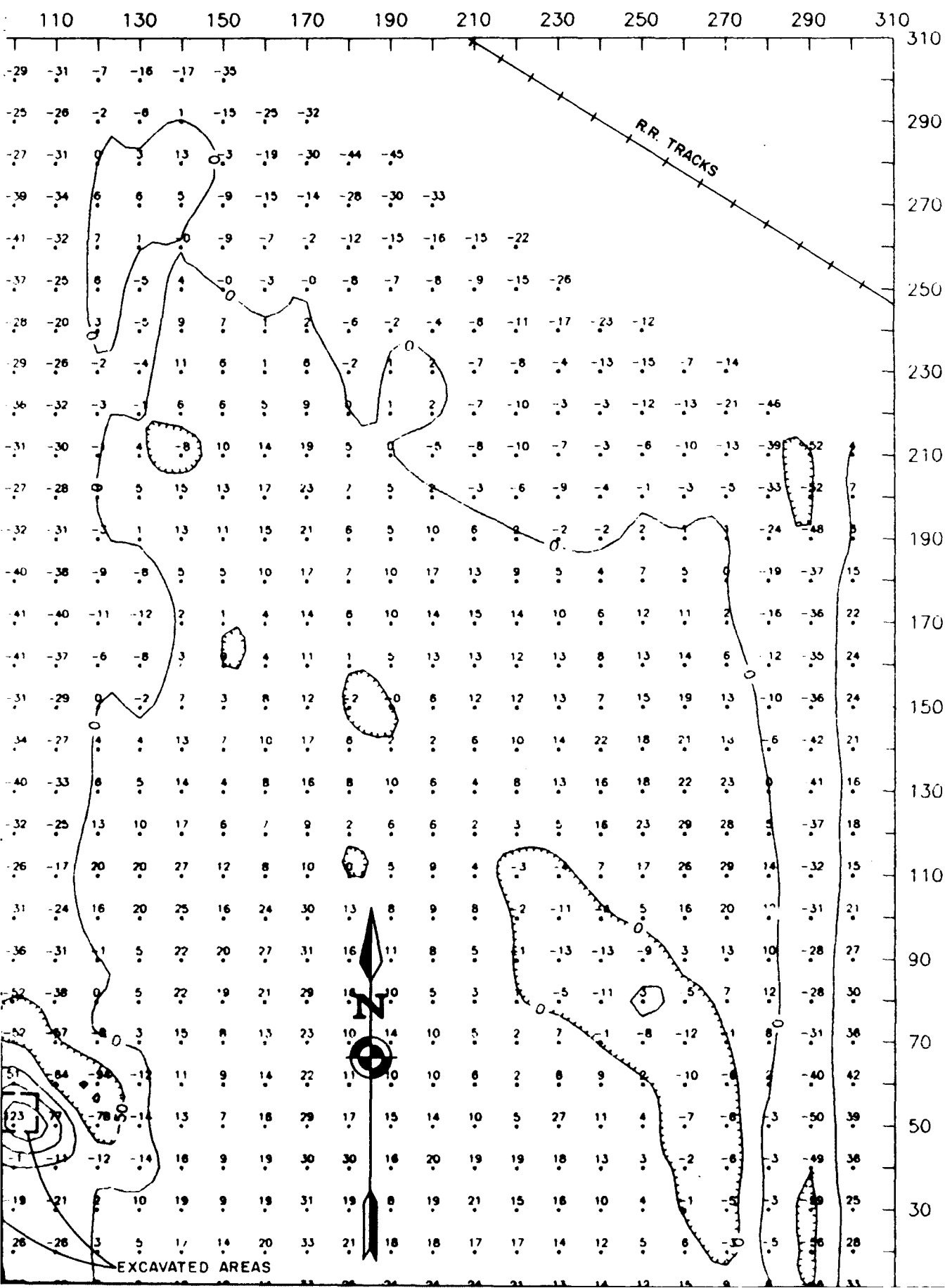
(6) Barbed Wire	(10) Wagon Wheel Hub	(14) Steel Drum, 1 ft. x 1 ft.
(7) Barbed Wire	(11) Metal Post	(15) Steel Post
(8) Section of 8 in. Galvanized Pipe, 2 ft. long	(12) Metal Post	(16) Two Steel Drums, 1 ft. dia.
(9) Barbed Wire	(13) Steel Drum, 1 ft. x 1.5 ft.	(17) Steel Post
		(18) Steel Post

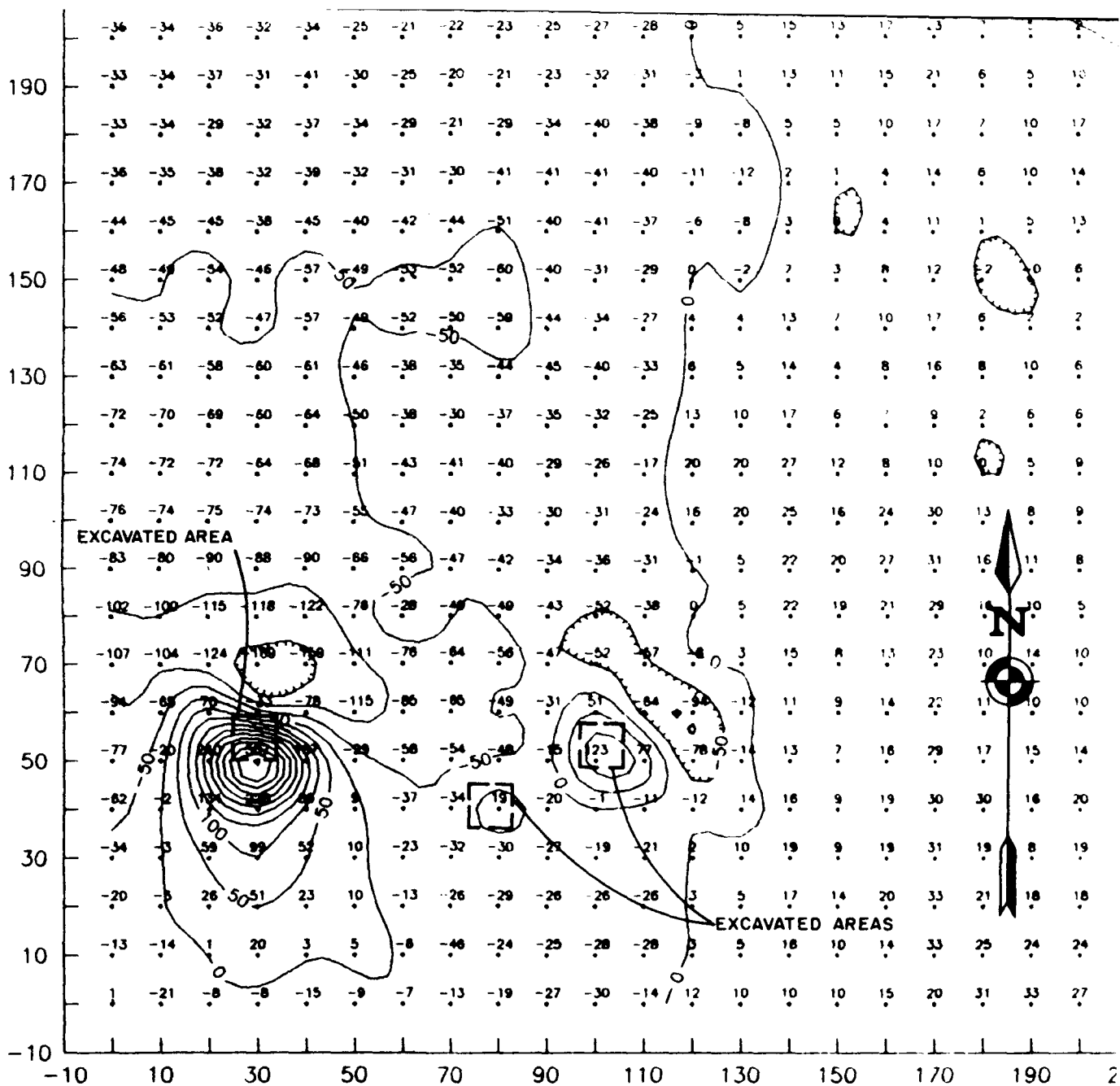
Plate No. 16

Total Magnetic Field Intensity, Grid 30A02
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.

for
Cleanup
Maryland







EXPLANATION

17 Location and Intensity of Measurement

Contour Interval = 50 Gammas (γ)

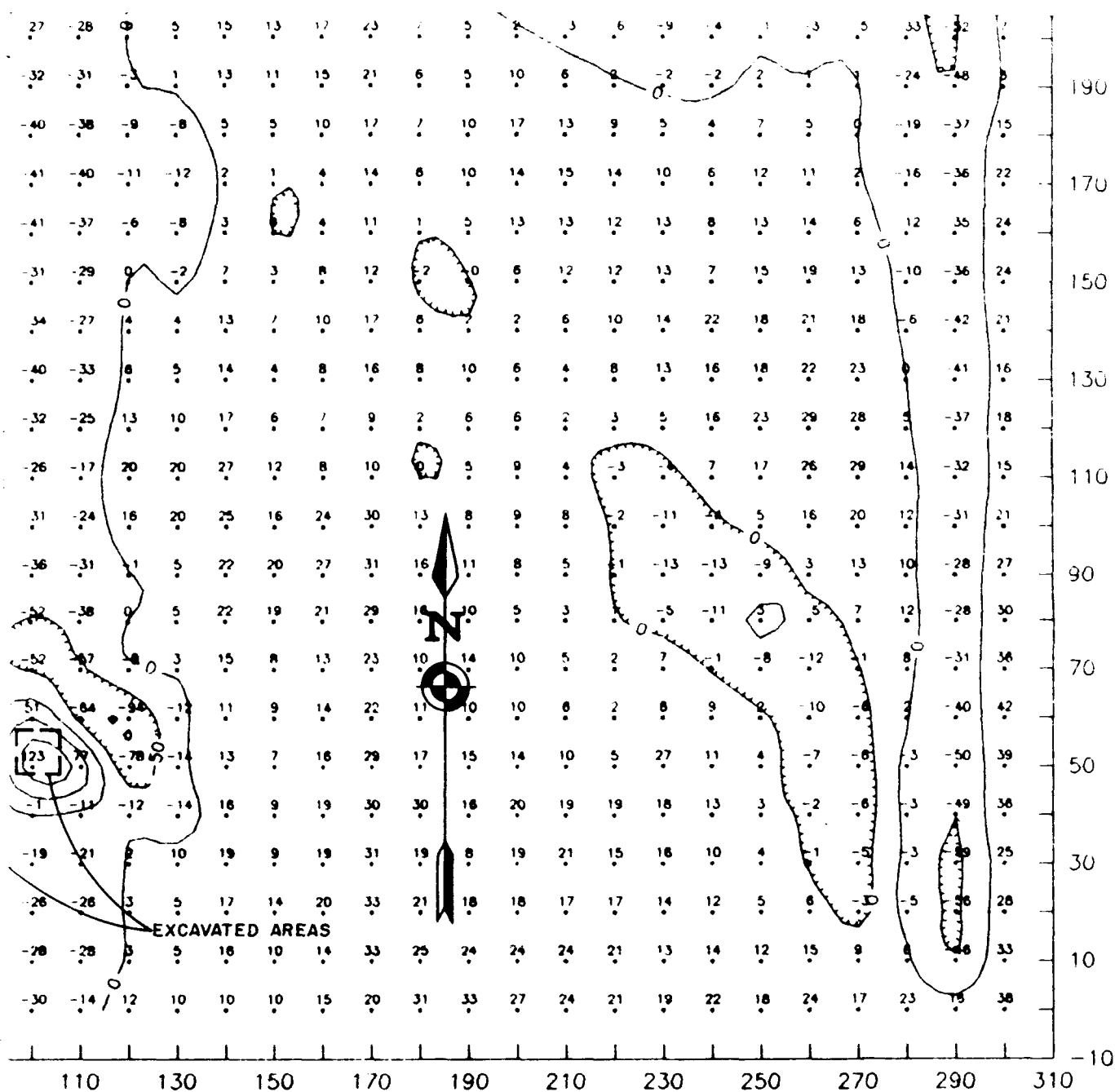
0 — Line of Equal Magnetic Intensity

30

Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate No. 1

Total Magn
Rocky Mou
Prepared E



EXPLANATION

Contour Interval = 50 Gammas (γ)

GRAPHIC SCALE IN FEET

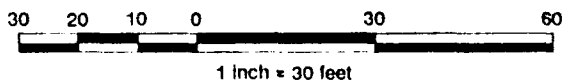
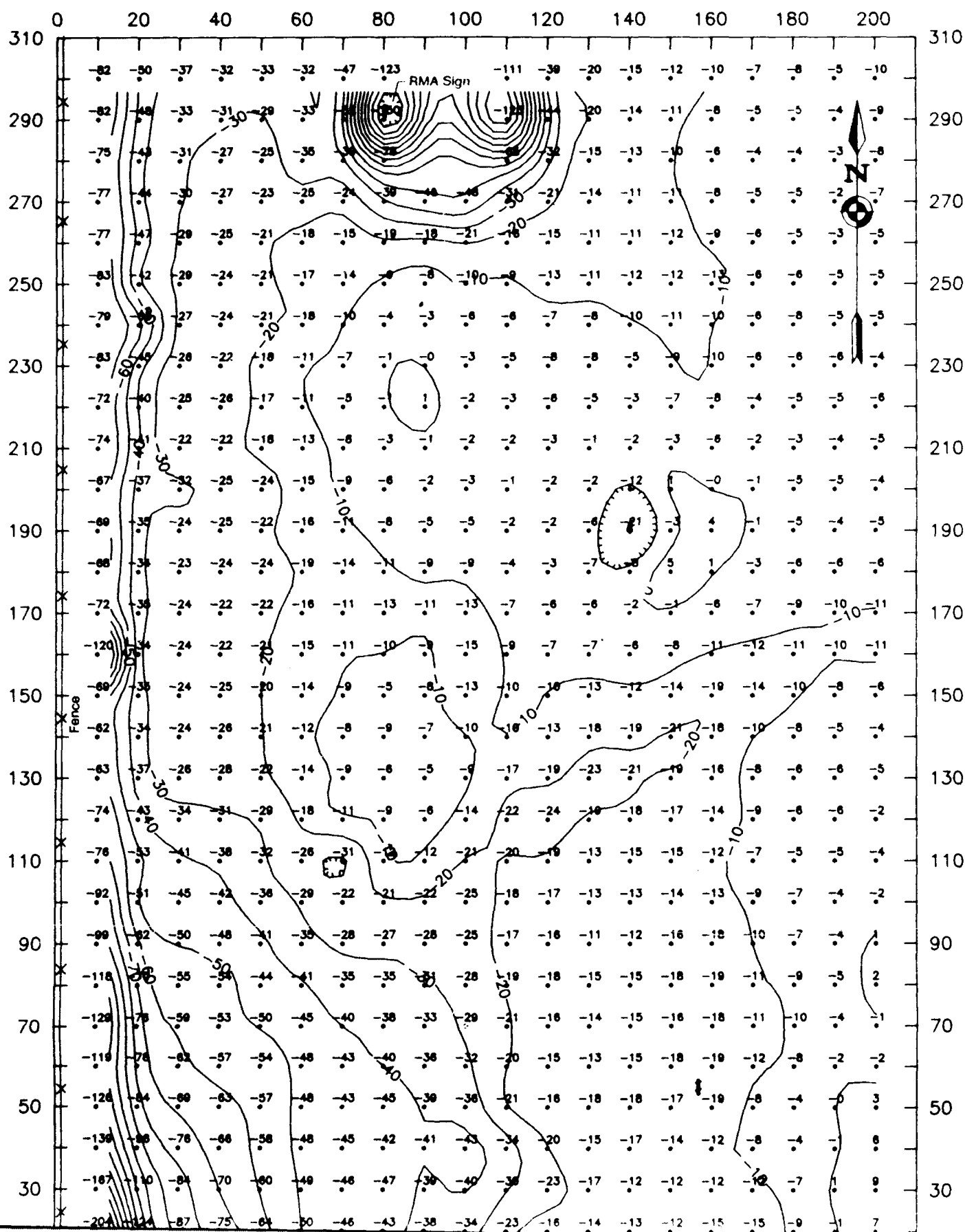
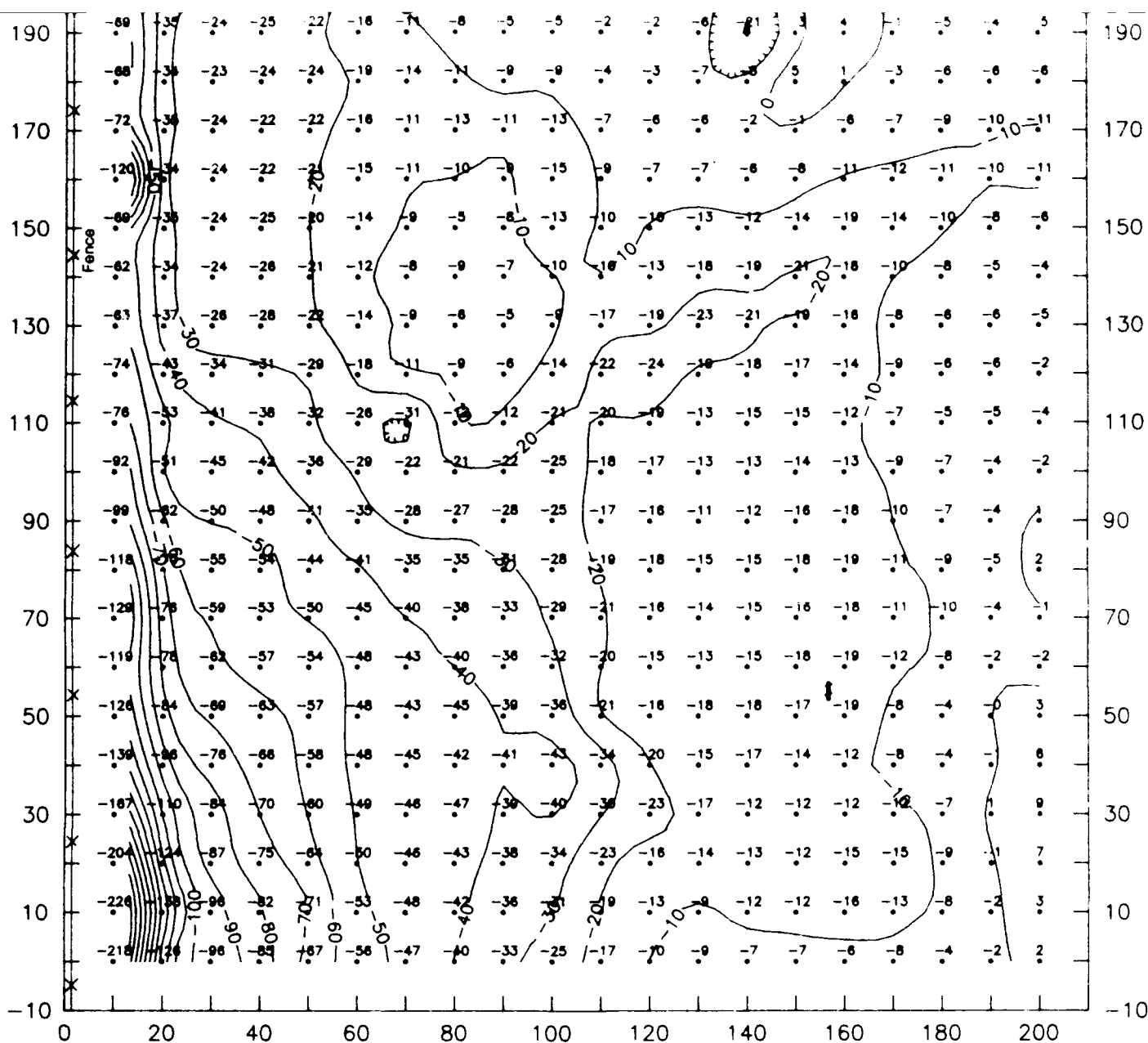


Plate No. 17

**Total Magnetic Field Intensity, Grid 33A03
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.**

r
anup
Maryland





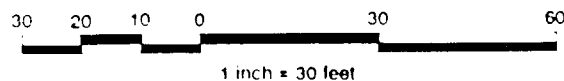
EXPLANATION

17 Location and Intensity of Measurement

0 — Line of Equal Magnetic Intensity

Contour Interval = 10 Gammas (γ)

GRAPHIC SCALE IN FEET



Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate No. 18

Total Magnetic Field Intensity, Grid 33A07
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.

270000

195000

190000

28

A06



275000

280000

East 36th Avenue

East 37th Avenue

A04

163

164

062

22

23

Y Street

A02

A01

A08

A02

190th Avenue

North Avenue

014

016

A03

Reservoir 'F'

27

021

022

023

024

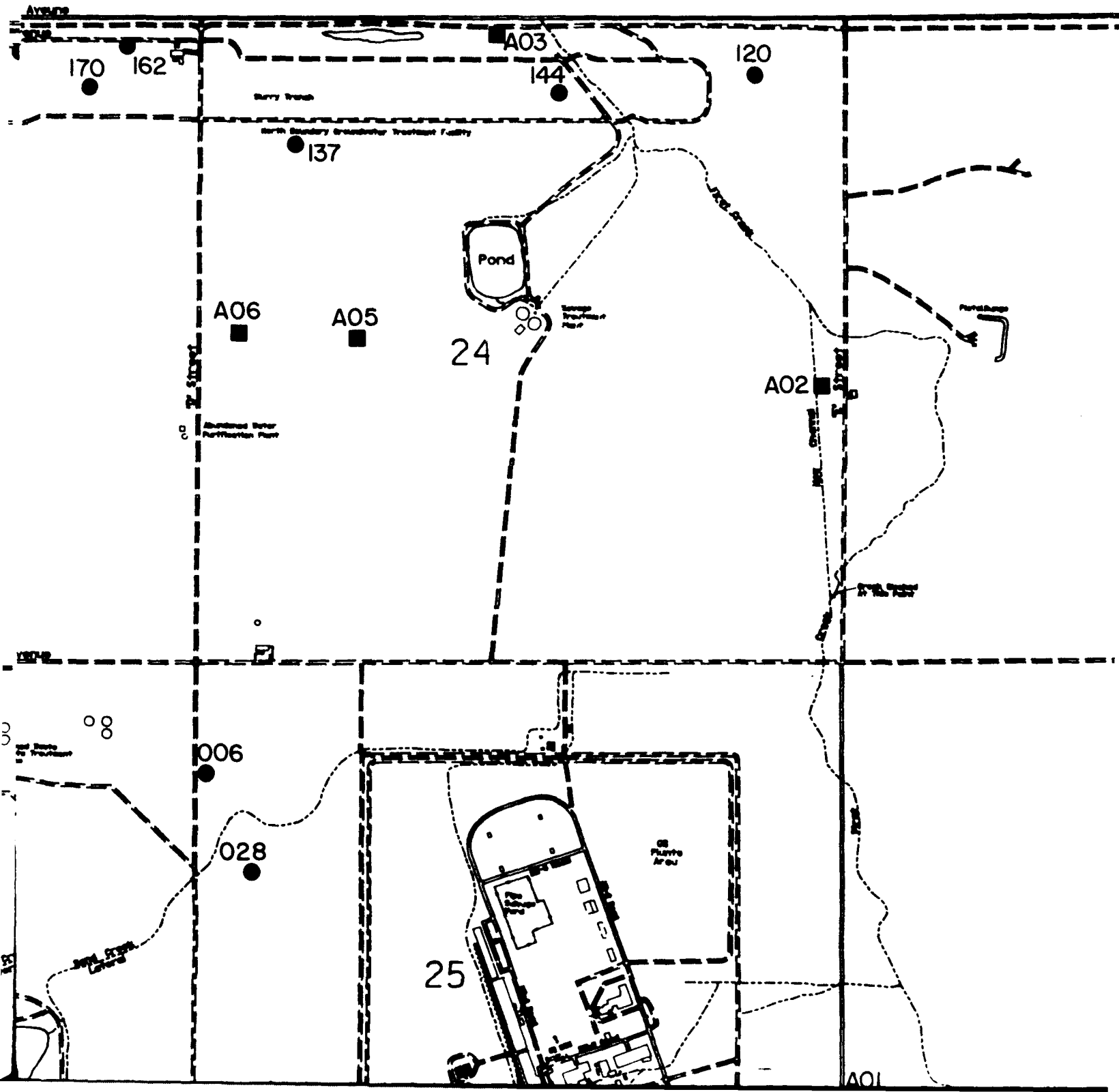
A01

26

026

285000

290000



190000

2195000

East 95th Avenue

Tenth Avenue

19

20

9th Street

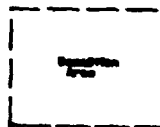


Antenna foundation

10th Avenue

30

29



24

2195000

2200000

East 35th Avenue
Tenth Avenue

20

T Street

Armed Forces

T Street

Buckley Road

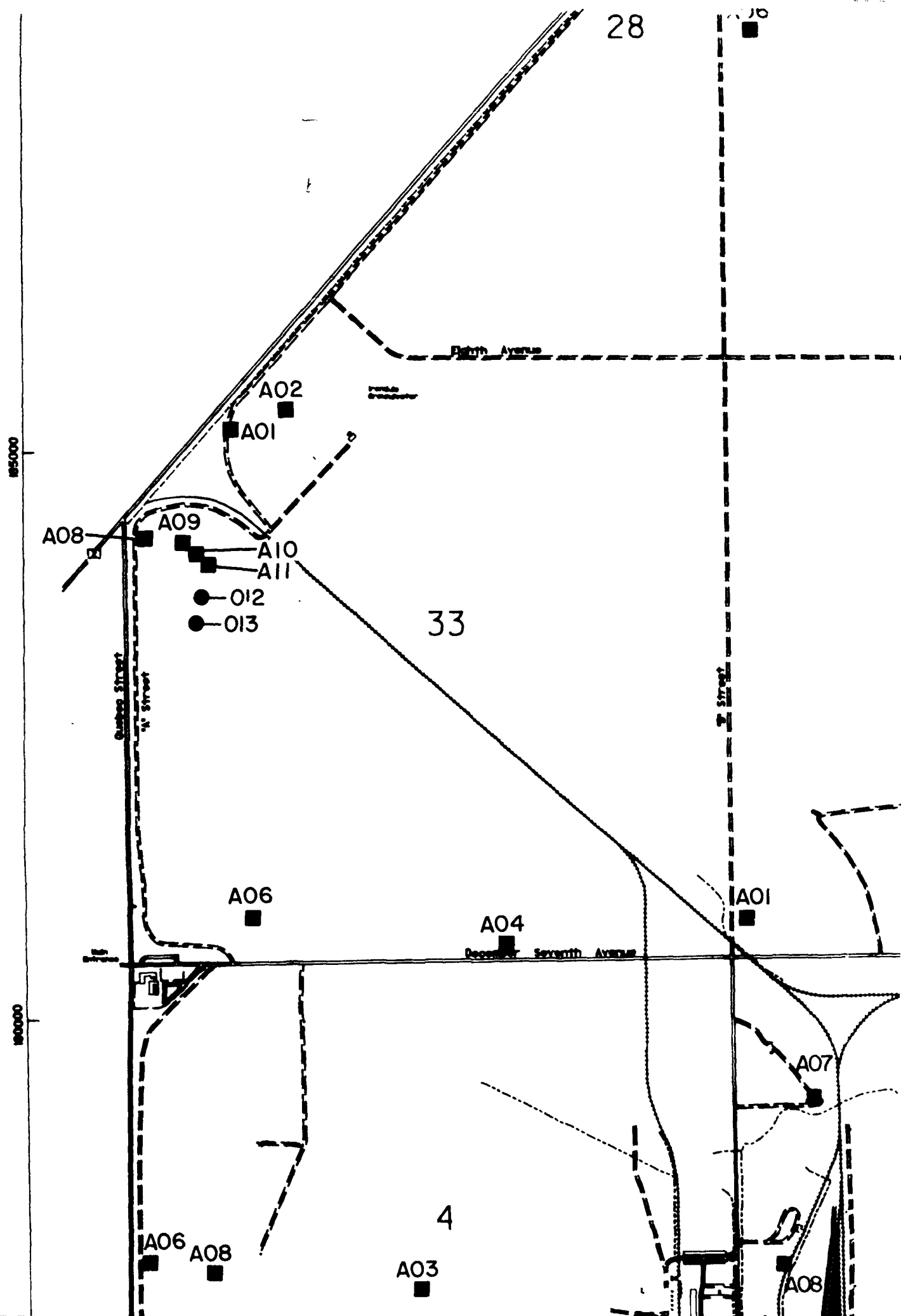
195000

North Avenue

190000

29

190000



27

022

023

024

026

A05

035

036

A01

26

Reservoir 'C'

Reservoir 'E'

Reservoir 'D'

019

010

A02

049

34

35

W Street

December Seventh

A07

A08

3

Garthman Box

Officer's Club

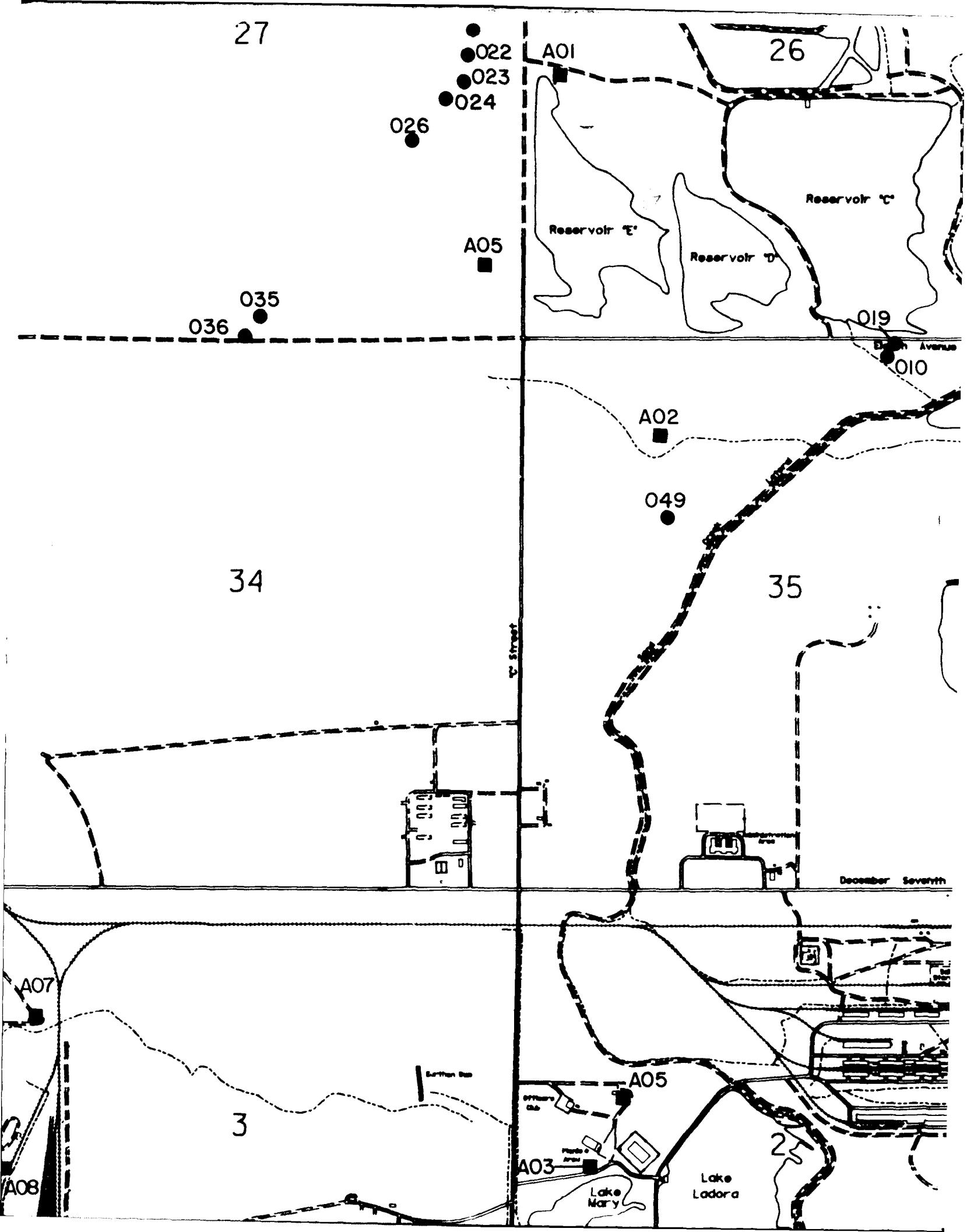
A03

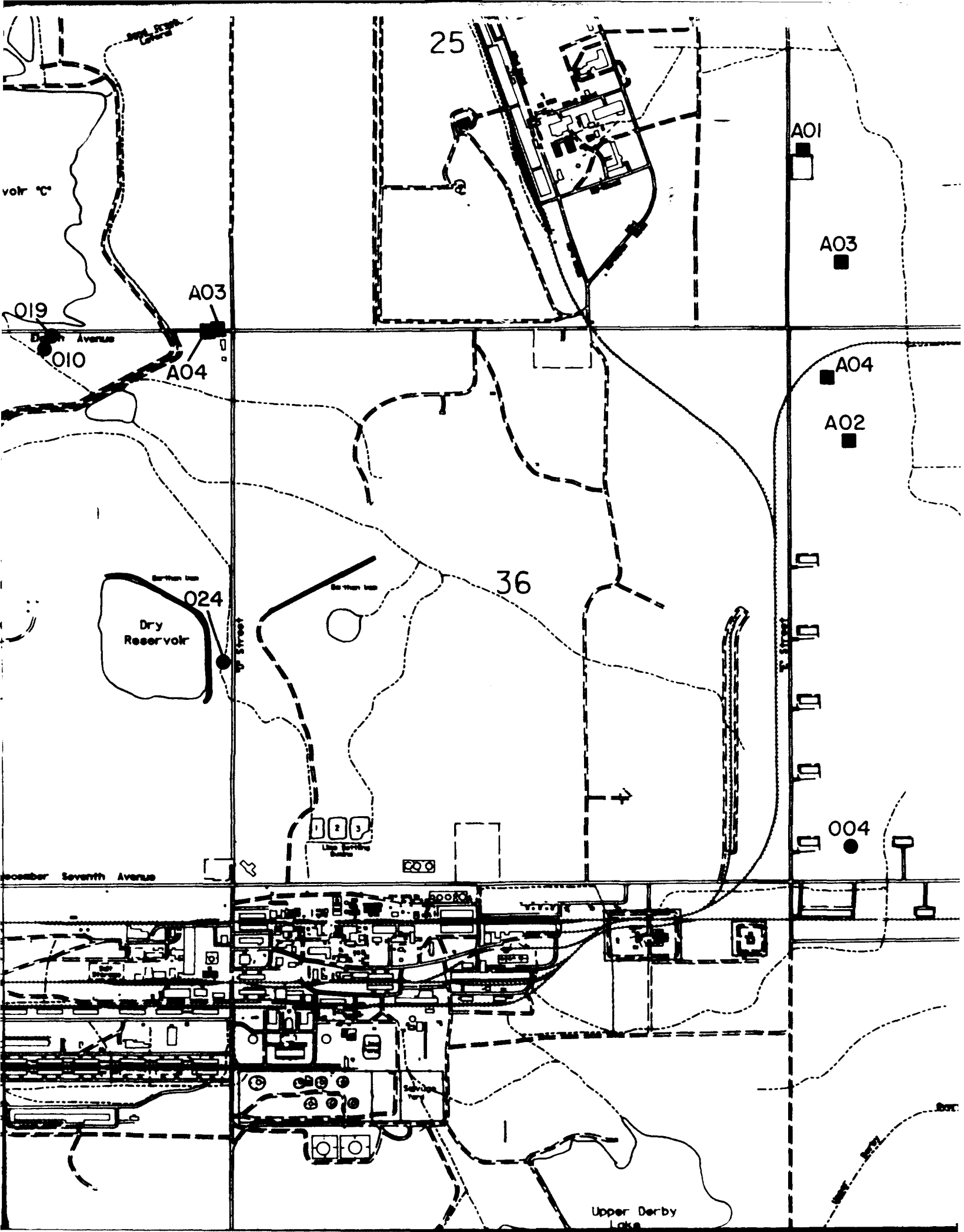
Lake Mary

A05

Lake Ladora

25





30

29

Eighth Avenue

32

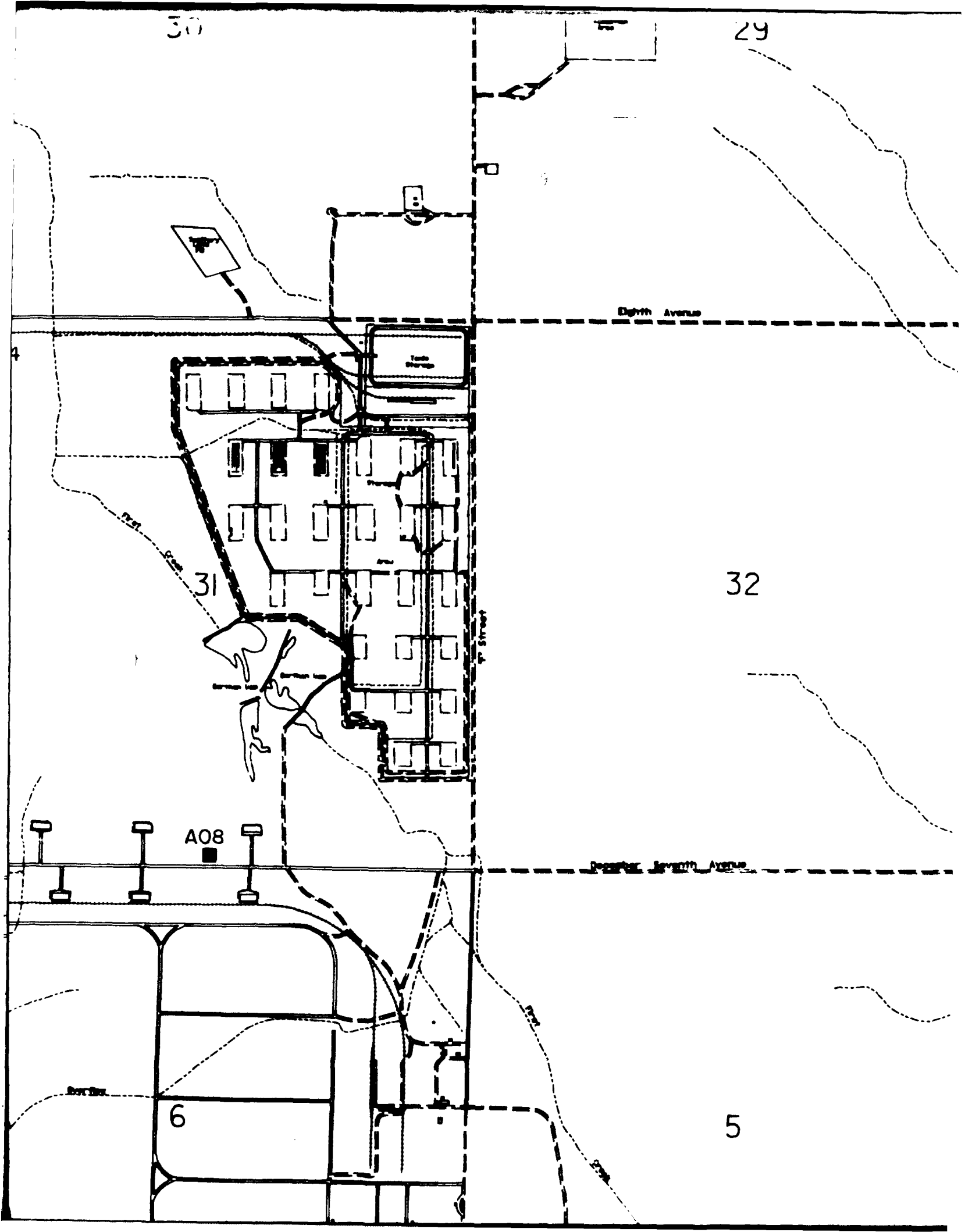
31

A08

Seventh Avenue

6

5



29

Eighth Avenue

32

100-113

Dominique Savin Avenue

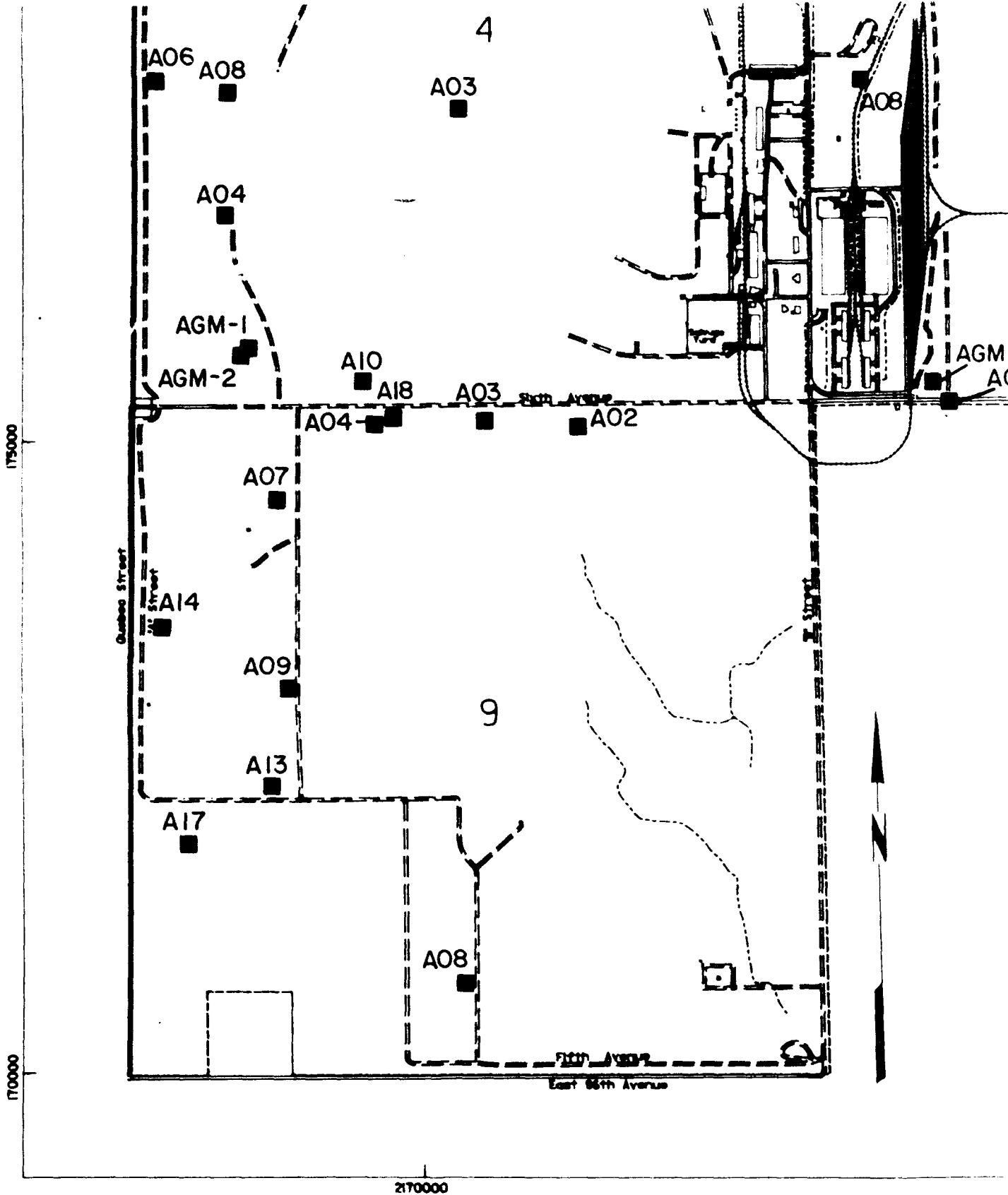
Verdict

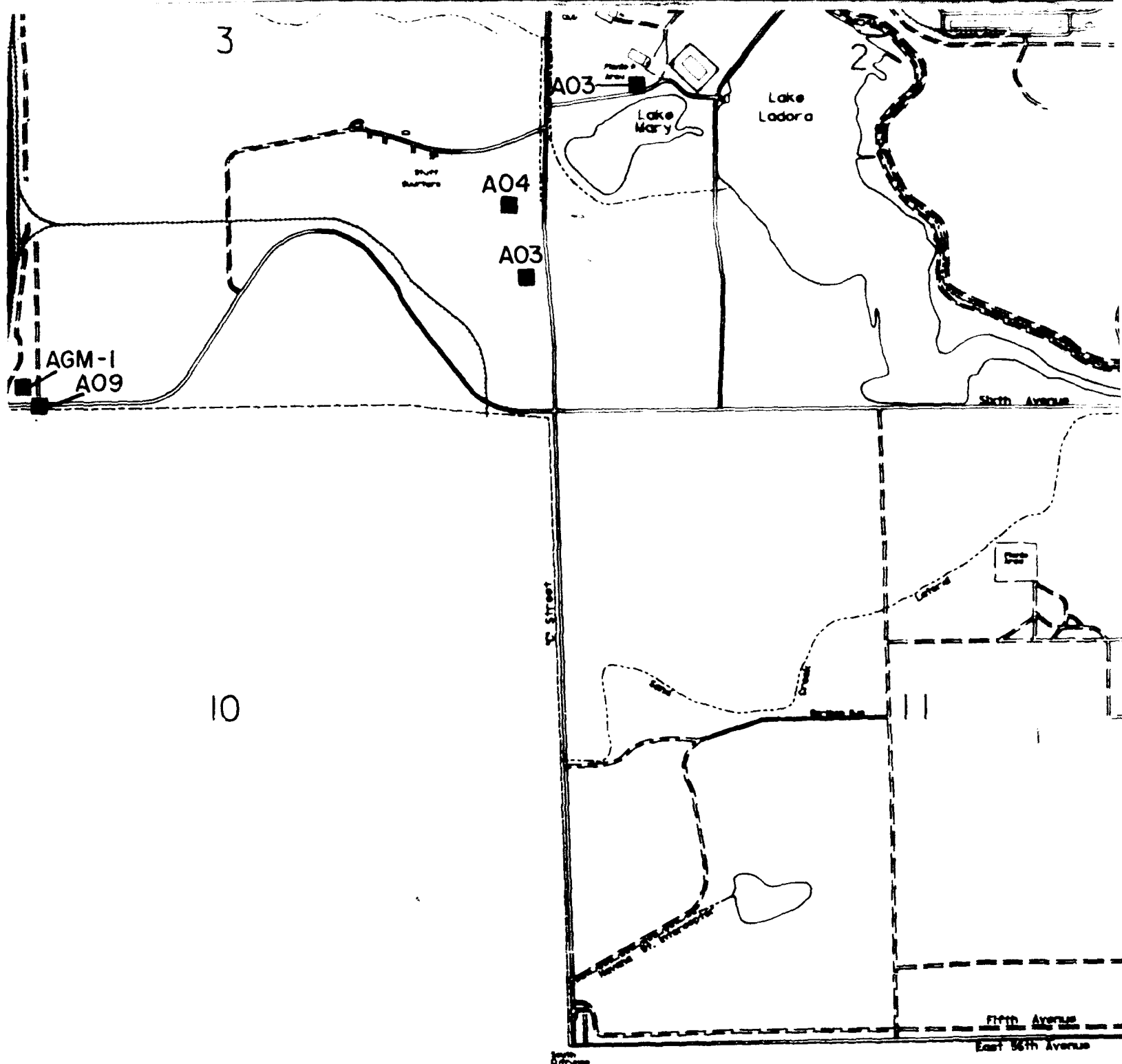
WILSON'S

000500

000068

5



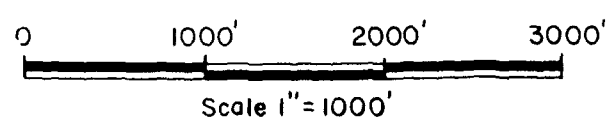


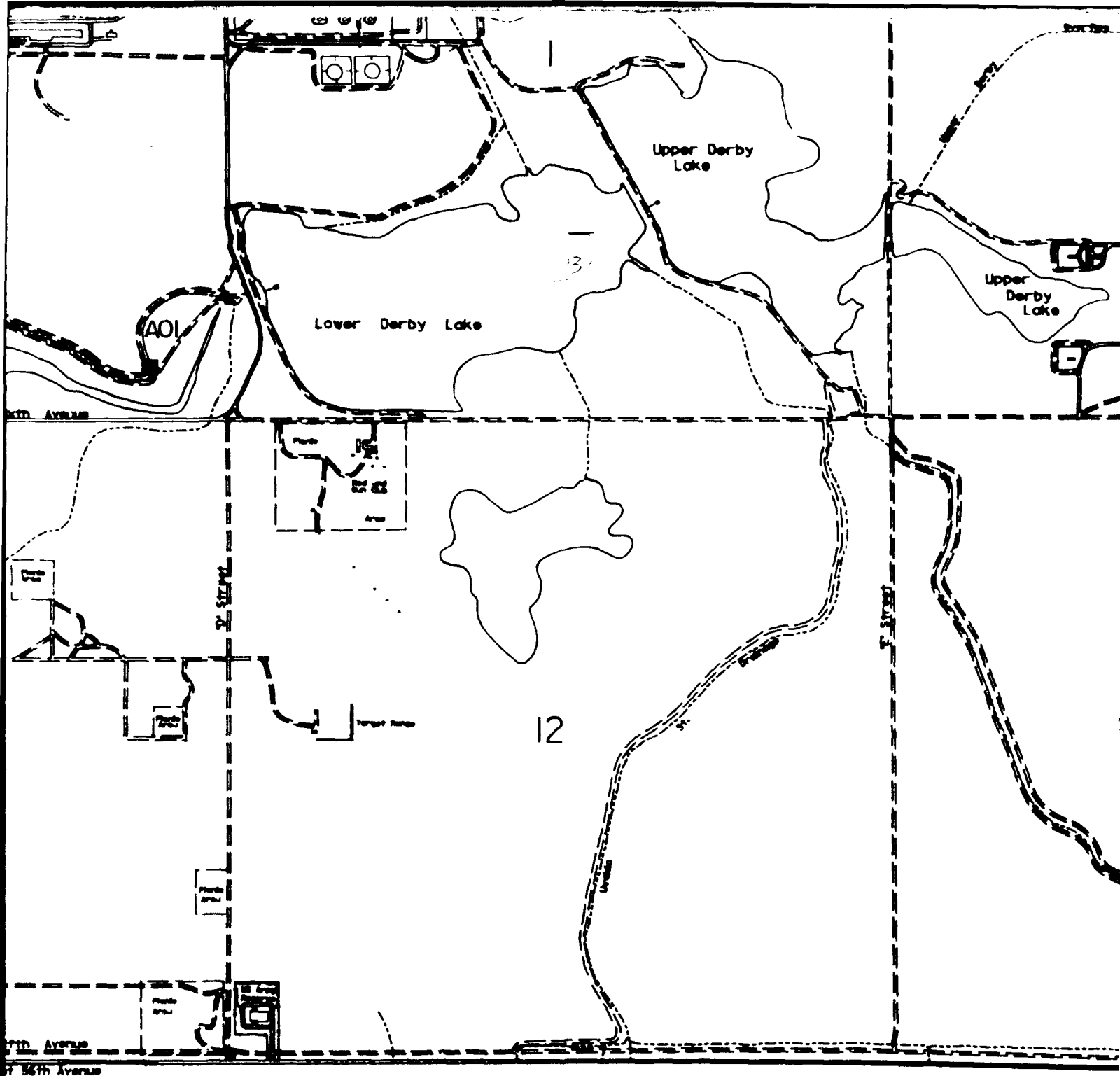
2175000

2180000

EXPLANATION

- A08 ■ Pre - 1942 Wells
- 035 ● Post - 1942 Wells



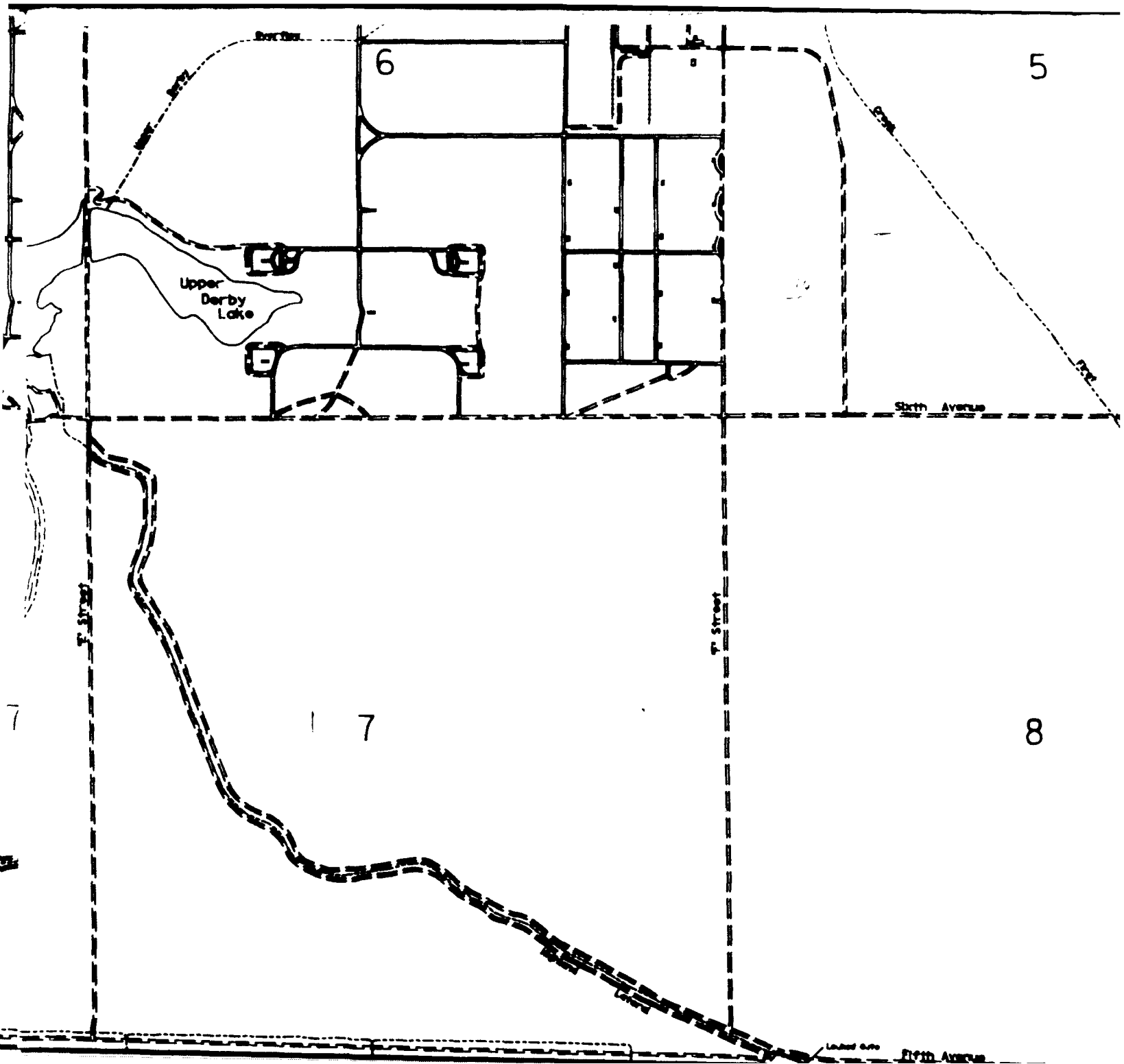


2185000

2190000

3000'

Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland



Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate 20

Geophysical Logs Well 02A03
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



d.b.a. COLORADO WELL LOGGING

1019 8th ST. GOLDEN, COLORADO 80401
PHONE: (303) 279-0171 TELEX: 45-0286

COLLAR LOCATOR
3-ARM CALIPER
WELL: 02A03

PROJECT: RMA - TASK 37

DATE: JULY 19, 1988

CLIENT: GERAGHTY & MILLER

COLOG ID NO:

LOCATION: R M A

STATE: COLORADO COUNTY: ADAMS

ELEV: DEPTH REF: GL

BOREHOLE DATA

DRILLING CONTRACTOR: LAYNE WESTERN

CUSTOMER ID: 355' COLOG ID: 342' (RE-ENTER OF OLD WELL)

PUN	BIT RECORD		CASING RECORD	
	NO.	Bit Size	From	To
1	3.5"	SURF	3 5/8"	3.5'
2				
3				
4				

HOLE MEDIUM: NATIVE FLUID / BENTONITE MUD

DRILL METHOD: (NEW) ROTARY

MUD TYPE: FRESH WATER / BENTONITE

TIME SINCE CIRC: 14 HRS

VISCOSITY: WEIGHT: Rm: at Deg

GENERAL DATA

INSTRUMENTATION: EG&G MT. SOPRIS SERIES III

UNIT/TRUCK: 19

LOGGING ENGINEER: TAYLOR

CLIENT REP: MR. RANDY SIPES & MR. JOHN CUMMINGS

OTHER SERVICES: NONE

OTHER SERVICES: NONE

LOGGING DATA

LOG FUNCTION	RUN NO.	EQUIPMENT		LOGGING SPEED FT./MIN.	DETECTOR TYPE	SPACING		SOURCE TYPE	LOGGED INTERVAL	
		MODEL	UPHOLE S.N.			TX-RX FEET	RX-RX FEET		FROM	TO
COLLAR LOC.	2	CCL	886	0.1	12				342 FT SURF	342 FT
CALIPER	1	3 ARM	NSN	0.1	12				342 FT SURF	342 FT

CALIBRATION FACTOR(S):

DIGITAL FILE NAME(S): 02A03FC0, .FC1, .WK1, .PRN, .PLP, .HDP

REMARKS:

THIS IS A RE-ENTRY OF AN OLD WELL.

APPARENT DEPTH OF CASING IS 37 FT.

CCL INDICATED ANOMOLIES AT 168', 285'-290', &

337'-340' ARE OF UNKNOWN ORIGIN.

TASK 37 HOLE 02A03

CASING COLLAR LOCATOR

1750

CALIPER

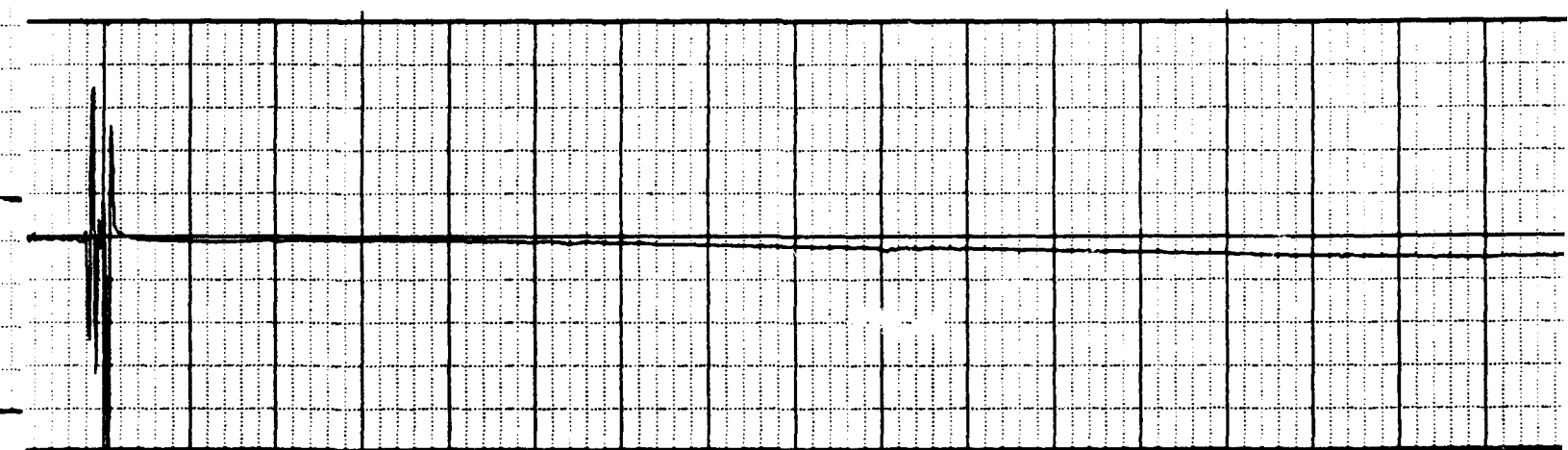
INCHES

K 0

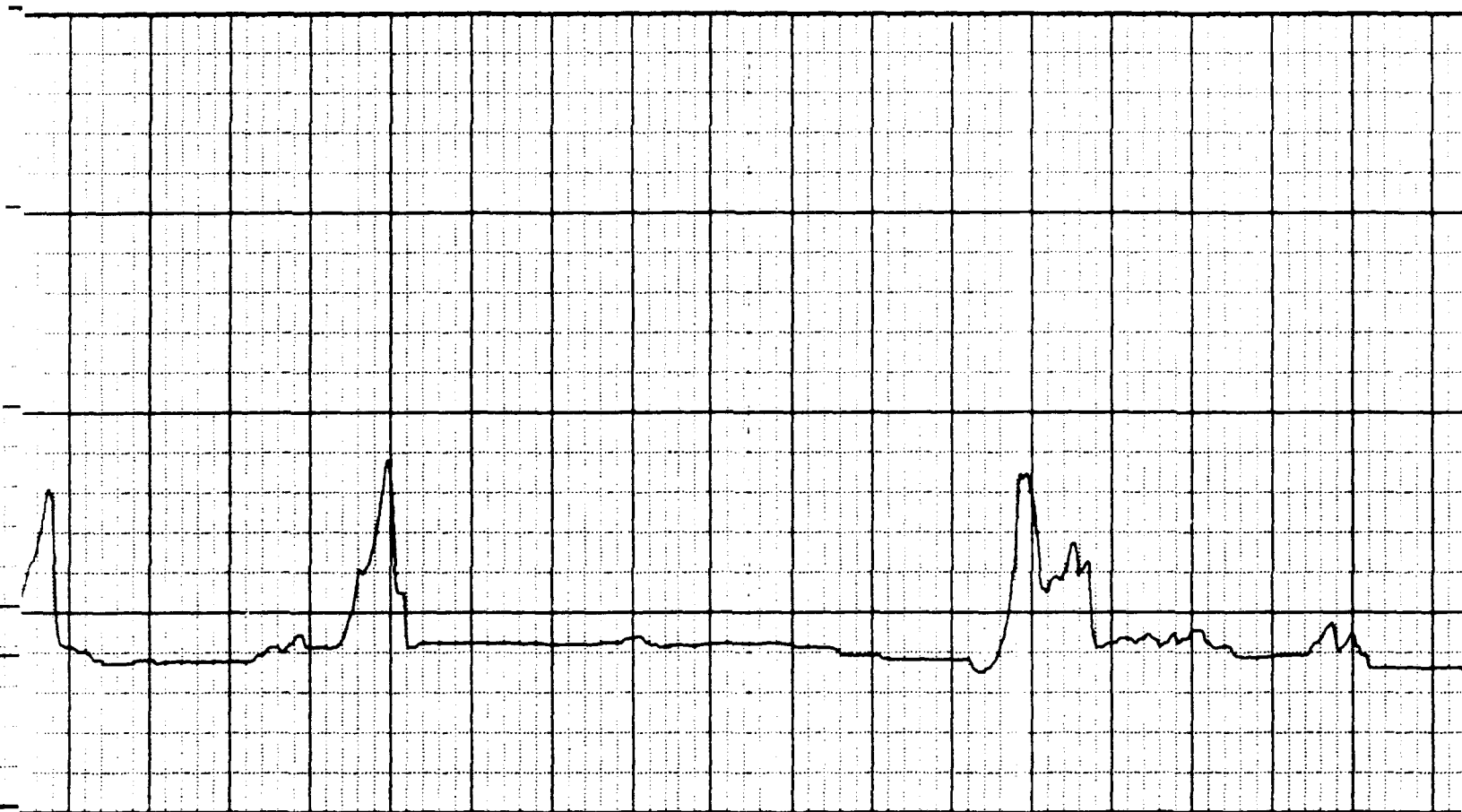
20



3

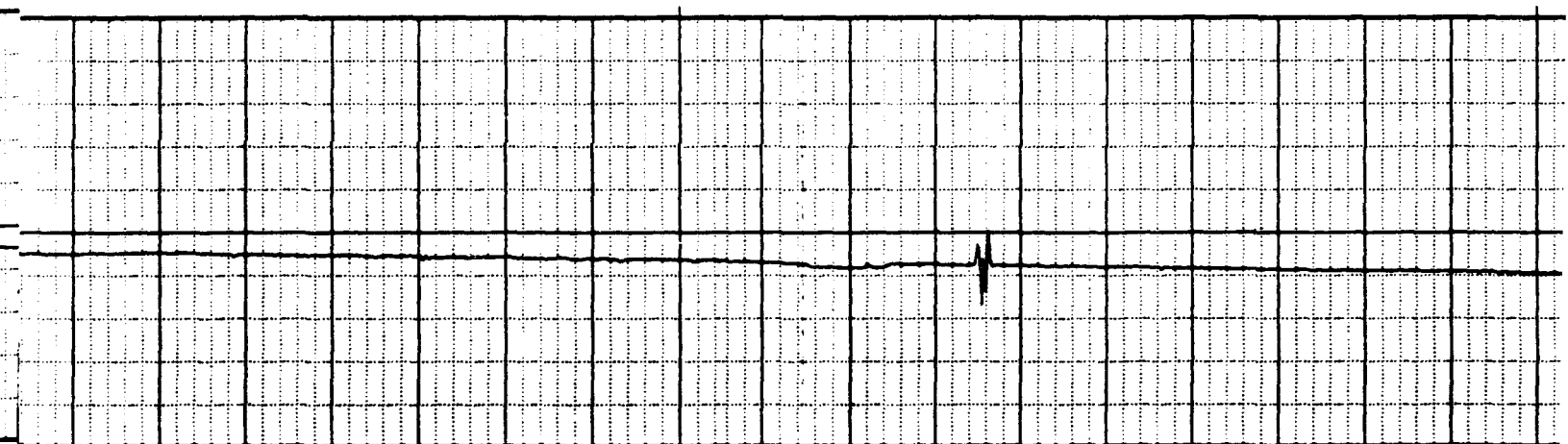


4

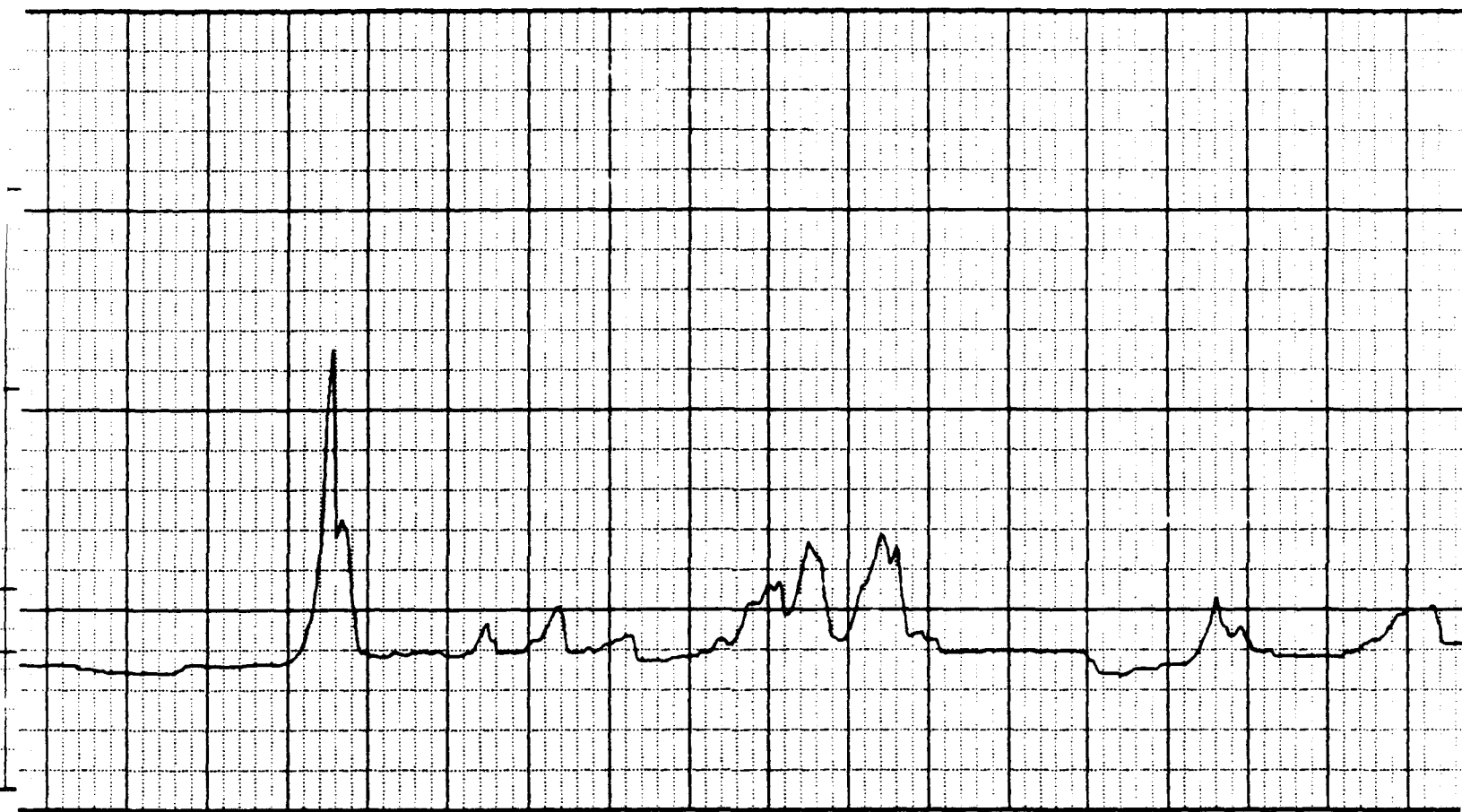


150

200

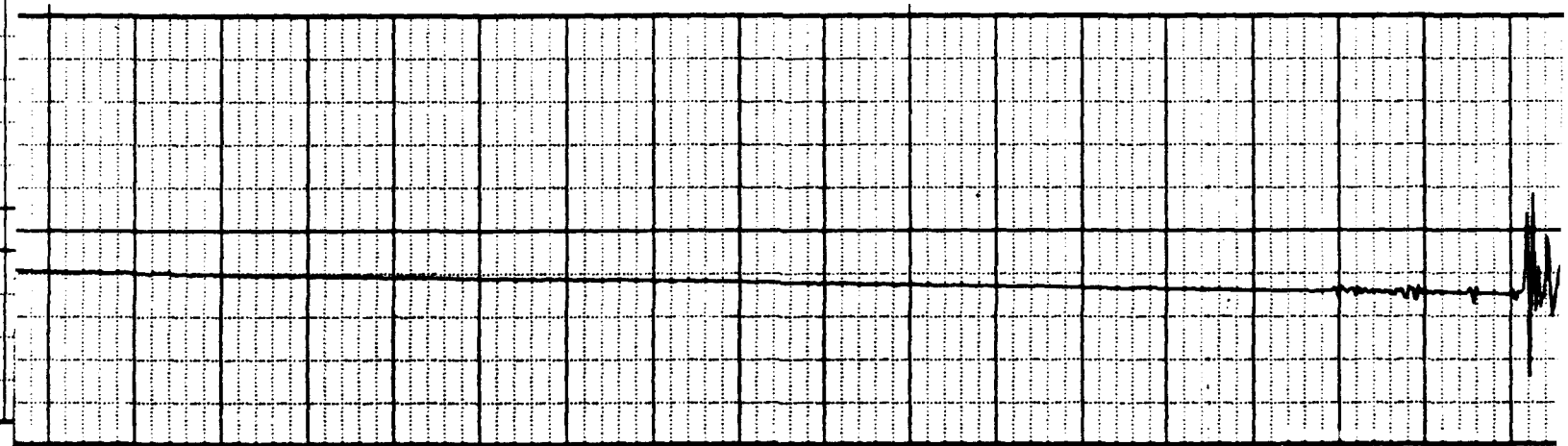


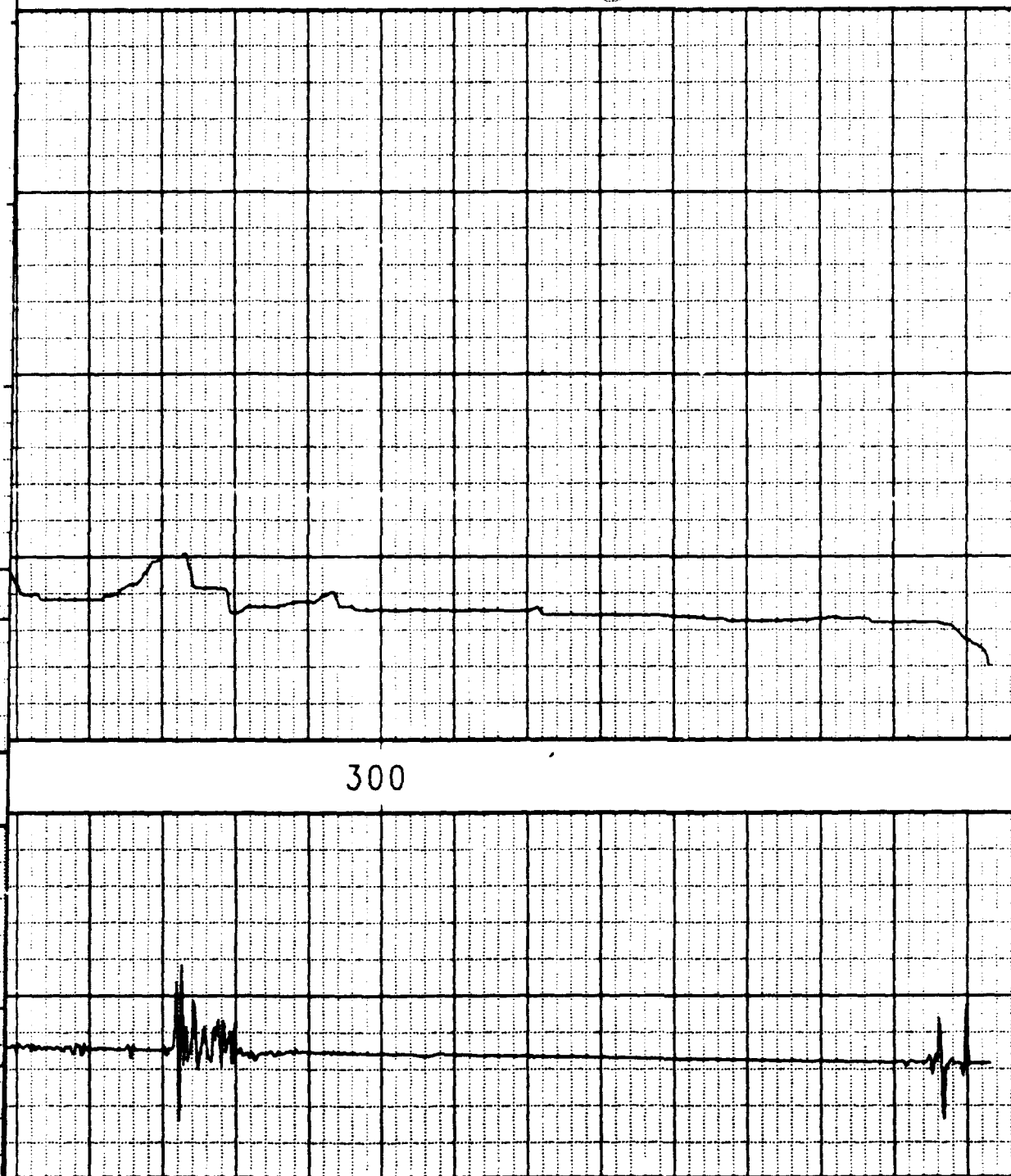
5



200

250





CALIPER
INCHES
20
K 0
TASK 37 HOLE 02A03
CASING COLLAR LOCATOR
1250
1750

Prepared For:

Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate 21

Geophysical Logs Well 26AO1
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



d.b.a. COLORADO WELL LOGGING

1019 8th ST. GOLDEN, COLORADO 80401
PHONE: (303) 279-0171 TELEX: 45-0286

COLLAR LOCATOR
3 ARM CALIPER
WELL: 26AO1

PROJECT: RMA TASK 37

CLIENT: GERAGHTY & MILLER

LOCATION:

STATE: COLORADO COUNTY: ADAMS

ELEV:

DEPTH REF: G.L.

DATE: JUNE 10, 1988

COLOG ID NO:

BOREHOLE DATA

DRILLING CONTRACTOR: LAYNE WESTERN

CUSTOMER ID: 376 FEET COLOG ID: 376 FEET

BIT RECORD		CASING RECORD	
Run	Bit Size	From	To
NO.	Size/Wgt/Thk.	From	To
1			
2			
3			
4			

HOLE MEDIUM: OLD HOLE

DRILL METHOD: ROTARY

MUD TYPE:

TIME SINCE CIRC: 1/4 HOUR

VISCOSITY:

WEIGHT:

Rm:

at Deg

GENERAL DATA

INSTRUMENTATION: EG&G MT. SOPRIS SERIES III
LOGGING ENGINEER: CROWDER / STAATZ
CLIENT REP: LUKE DARRAUGH
OTHER SERVICES:

UNIT/TRUCK: 243 / 19

CLIENT REP: LUKE DARRAUGH
OTHER SERVICES:

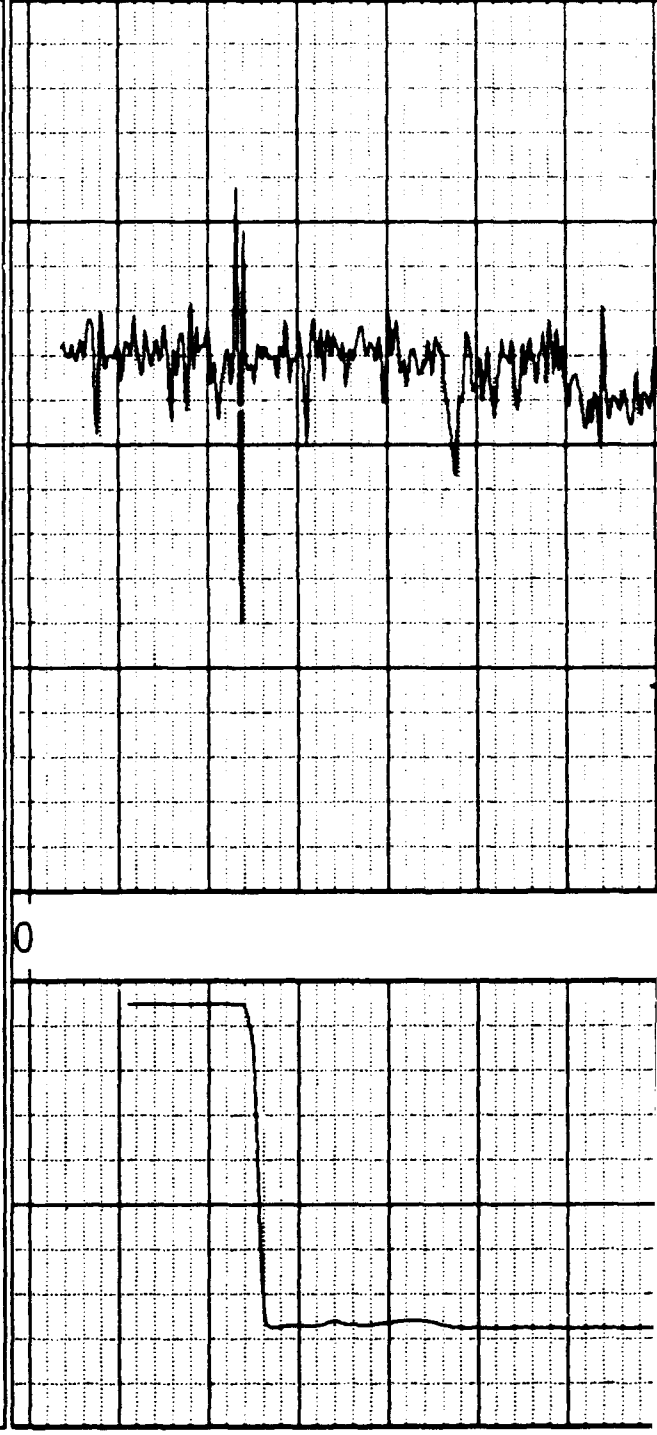
LOGGING DATA

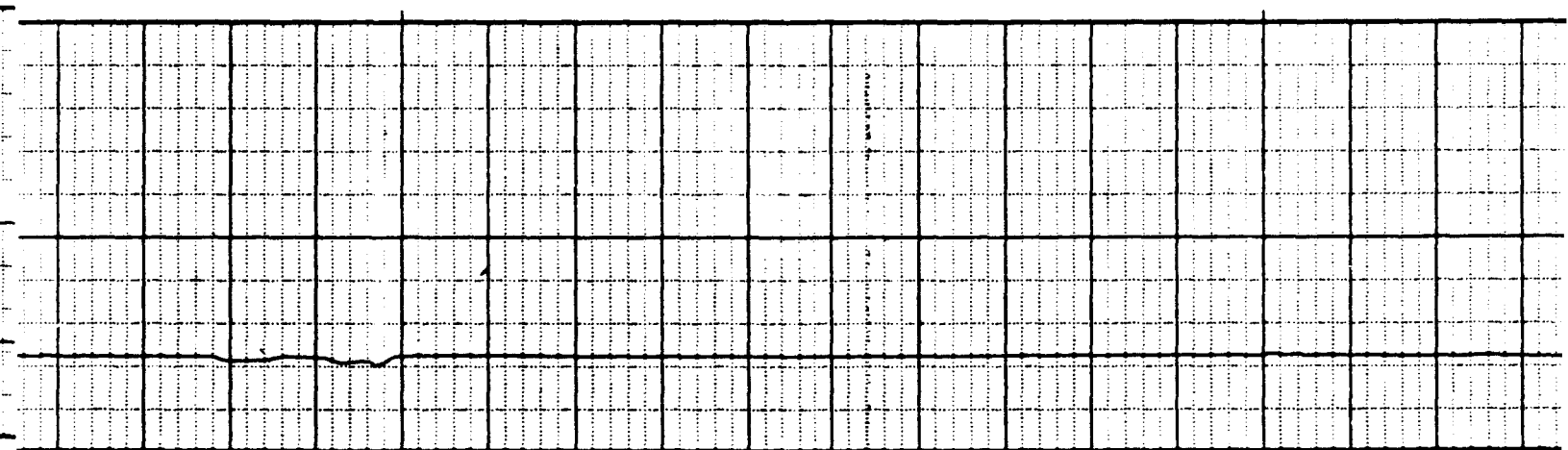
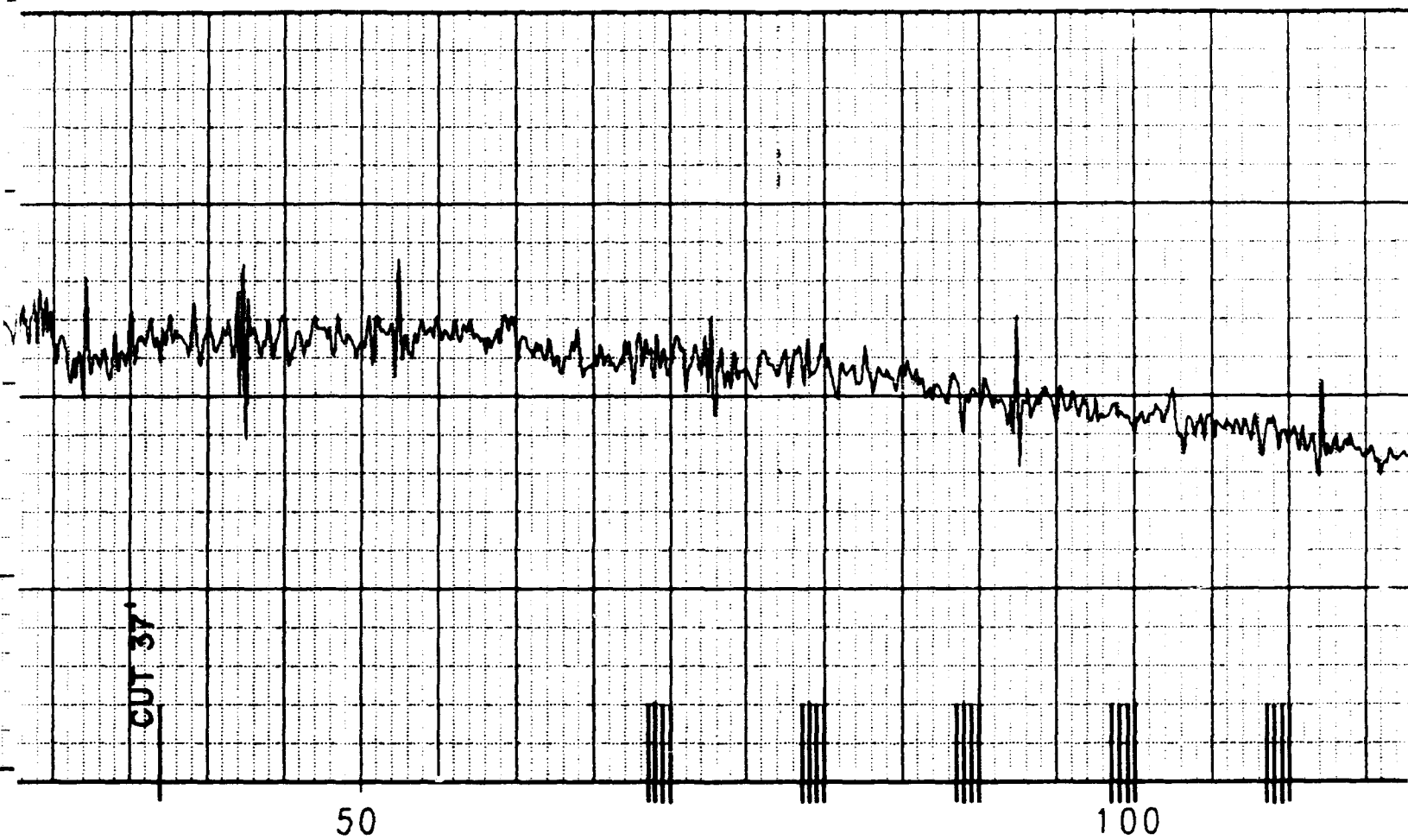
LOG FUNCTION	RUN NO.	EQUIPMENT		LOGGING INT SPEED FT./MIN	DETECTOR TYPE	SPACING		SOURCE TYPE	SIZE CURE	LOGGED INTERVAL	
		MODEL	UPHOLE S.N.			Tx-Rx FEET	Rx-Rx FEET			FROM	TO
CALIPER	1	3ARM	NSN	FLM	0.1	20				378'	5'
CASING LOC.	2	CCL	000	ALM	0.1	20				378'	2'

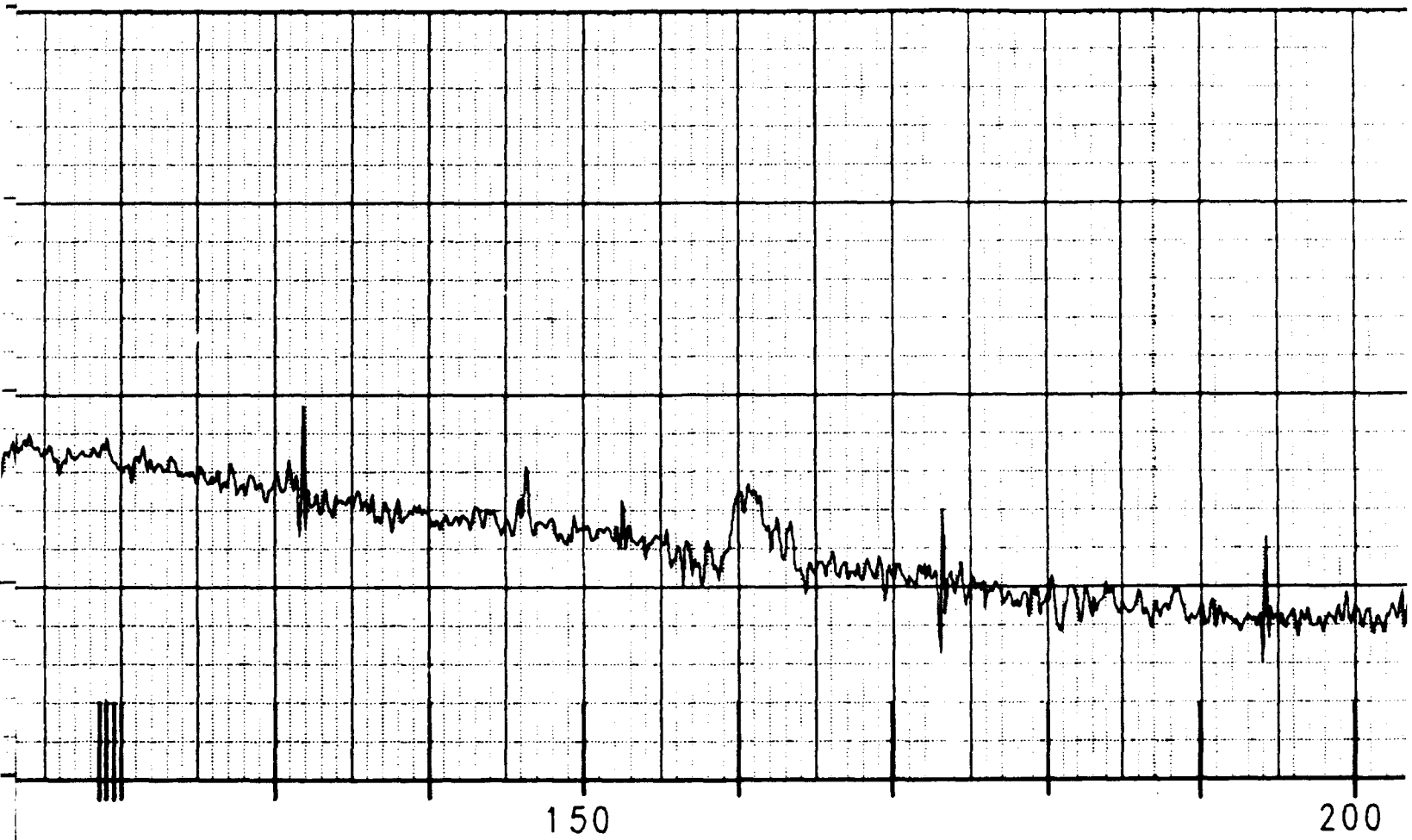
CALIBRATION FACTOR(S):
DIGITAL FILE NAME(S): 26A01PLP.FE0, 26A01PLP, 26A01HDP
REMARKS:

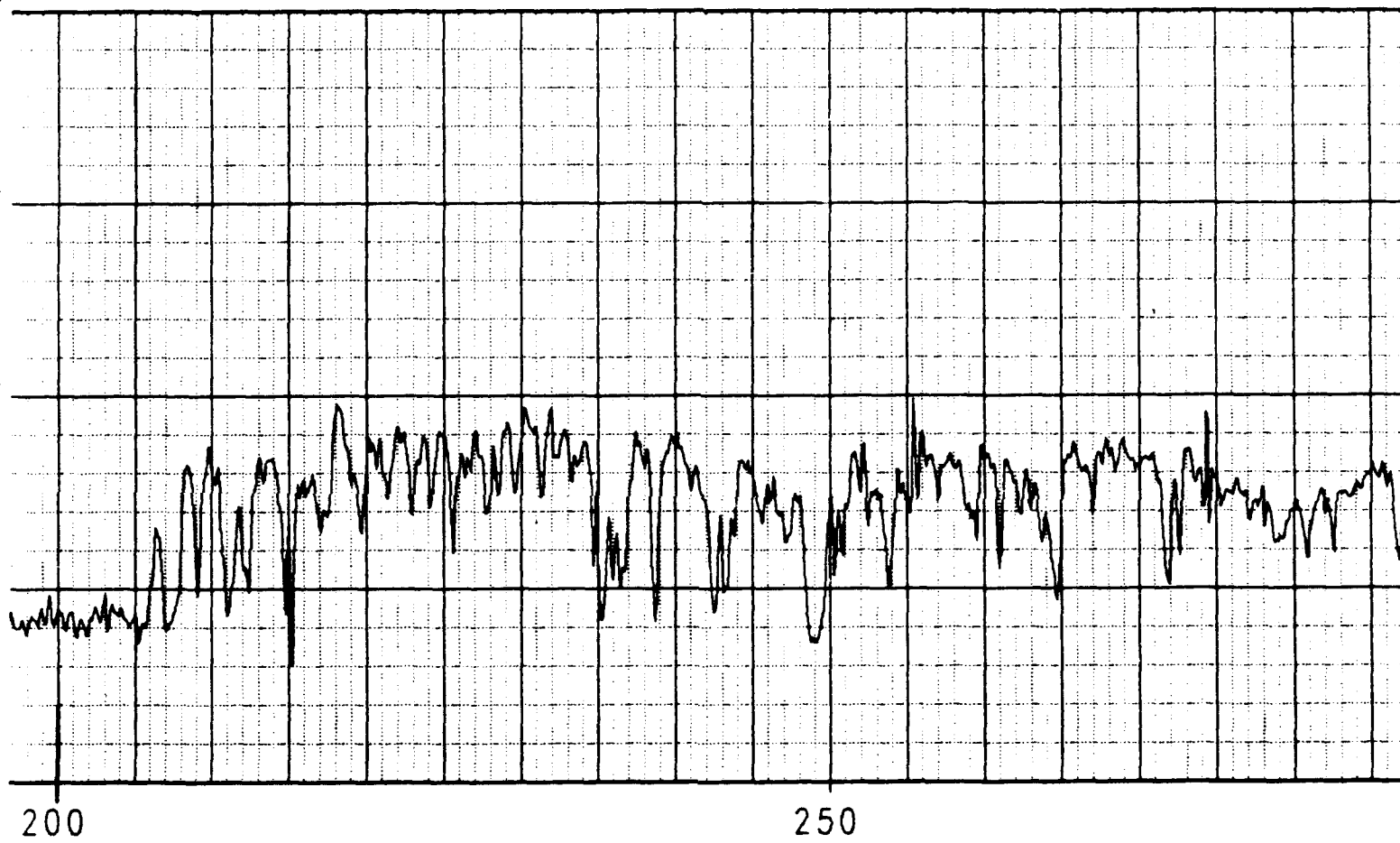
TASK 37 WELL 26A01, JUNE 10, 1988

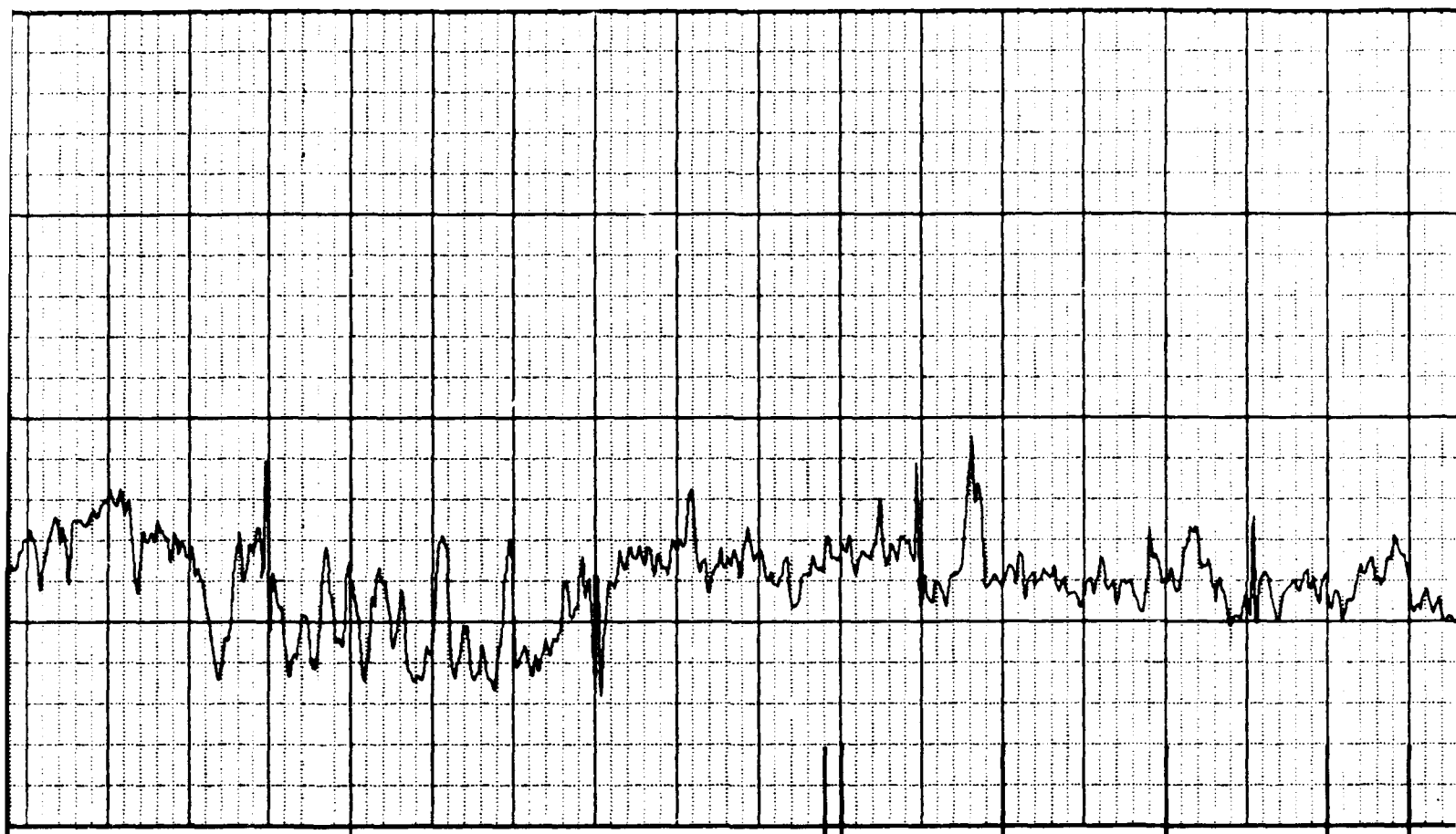
CALIPER INCHES 1.500 6.500 700
CASING COLLAR LOCATOR MILLIVOLTS K 200





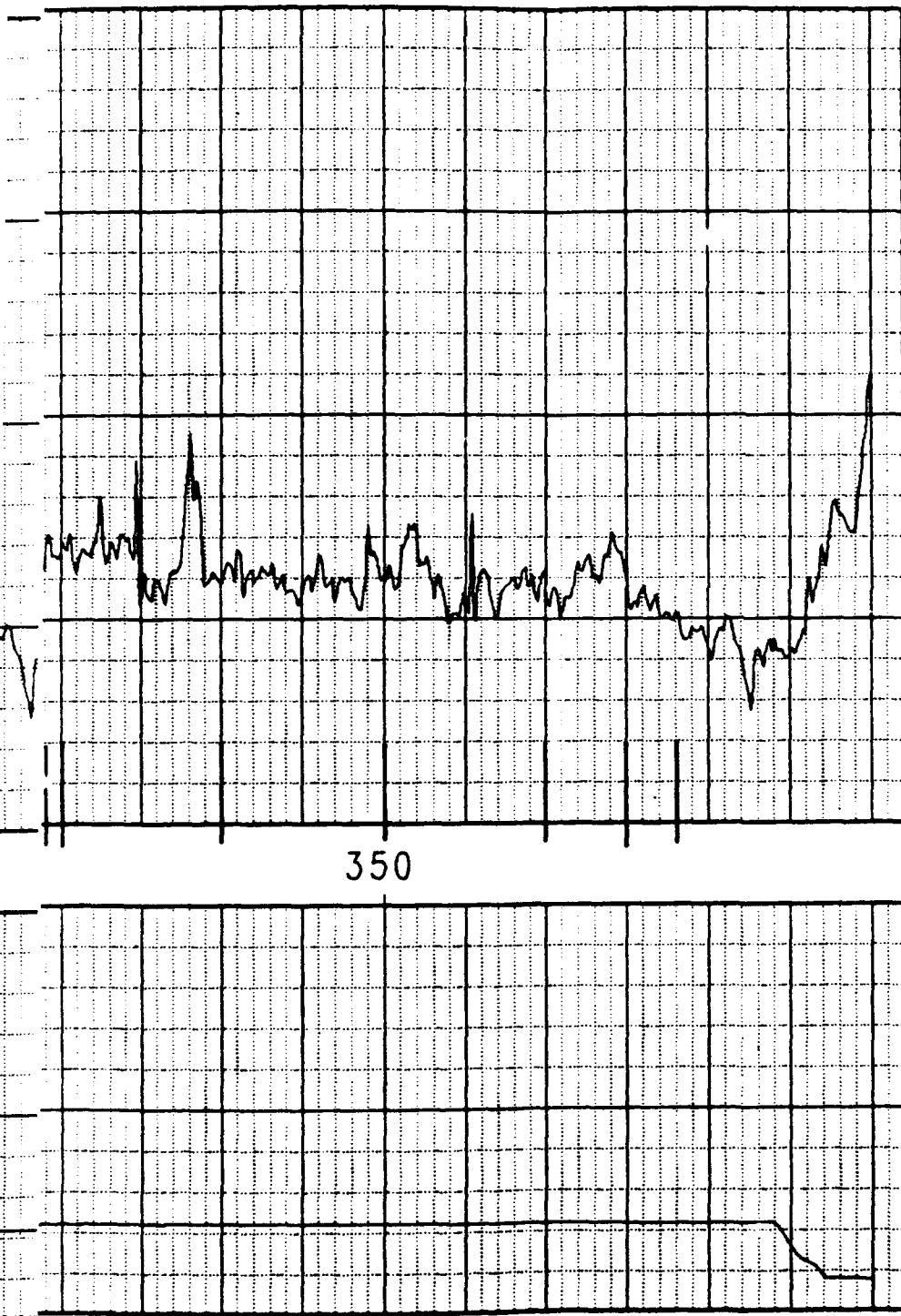






300

350

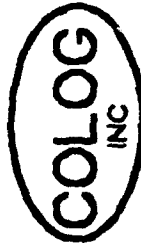


CALPER 1.500 6.500 200 CASING COLLAR LOCATOR 700
INCHES MILLIVOLTS
TASK 37 WELL 26A01, JUNE 10, 1988

Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate 22

Geophysical Logs Well 26A03
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



d.b.a. COLORADO WELL LOGGING

1019 8th ST. GOLDEN, COLORADO 80401
PHONE: (303) 279-0171 TELEX: 45-0286

COLLAR LOCATER
3-ARM CALIPER
WELL: 26A03

PROJECT: RMA - TASK 37

DATE: AUGUST 11, 1988

CLIENT: GERAGHTY & MILLER

COLOG ID NO:

LOCATION: SW 1/4 NW 1/4 NE 1/4 SEC. 26, T2S, R67W

STATE: COLORADO COUNTY: ADAMS

ELEV:

DEPTH REF: GL

BOREHOLE DATA

DRILLING CONTRACTOR: LAYNE

CUSTOMER ID: 711 FT. COLOG TD: 681 FEET

BIT RECORD		CASING RECORD	
Run	Bit Size	From	To
NO.			
1			
2			
3			
4			

HOLE MEDIUM: WATER

DRILL METHOD: ROTARY

MUD TYPE: BENTONITE

TIME SINCE CIRC: LESS THAN 1 HOUR

VISCOSITY:

WEIGHT:

Rm:

at

Deg

GENERAL DATA

INSTRUMENTATION: EG&G MT. SOPRIS SERIES III

UNIT/TRUCK: 245 / 19

LOGGING ENGINEER: BOB CROWDER / TOM STAATZ

CLIENT REP: LANCE INDERGARD

INSTRUMENTATION: EG&G MT. SOPRIS SERIES III
 LOGGING ENGINEER: BOB CROWDER / TOM STAATZ
 CLIENT REP: LANCE INDERGARD
 OTHER SERVICES:

UNIT/TRUCK: 245 / 19

LOGGING DATA

LOG FUNCTION	RUN NO.	MODEL	EQUIPMENT		LOGGING		DETECTOR TYPE	SPACING		SOURCE		LOGGED INTERVAL		
			PROBE S.N.	UPHOLE S.N.	DIG IN FEET	INT SPEED FT./MIN		Tx-Rx FEET	Rx-Rx FEET	TYPE	SIZE CURIE	FROM	TO	INT. FEET
3-ARM CAL.	1	3 ARM	NSN	FLM	0.1	20						680'	2'	678'
COLLAR LOC.	2	CCL	886	ALM	0.1	20						680'	SURF	680'

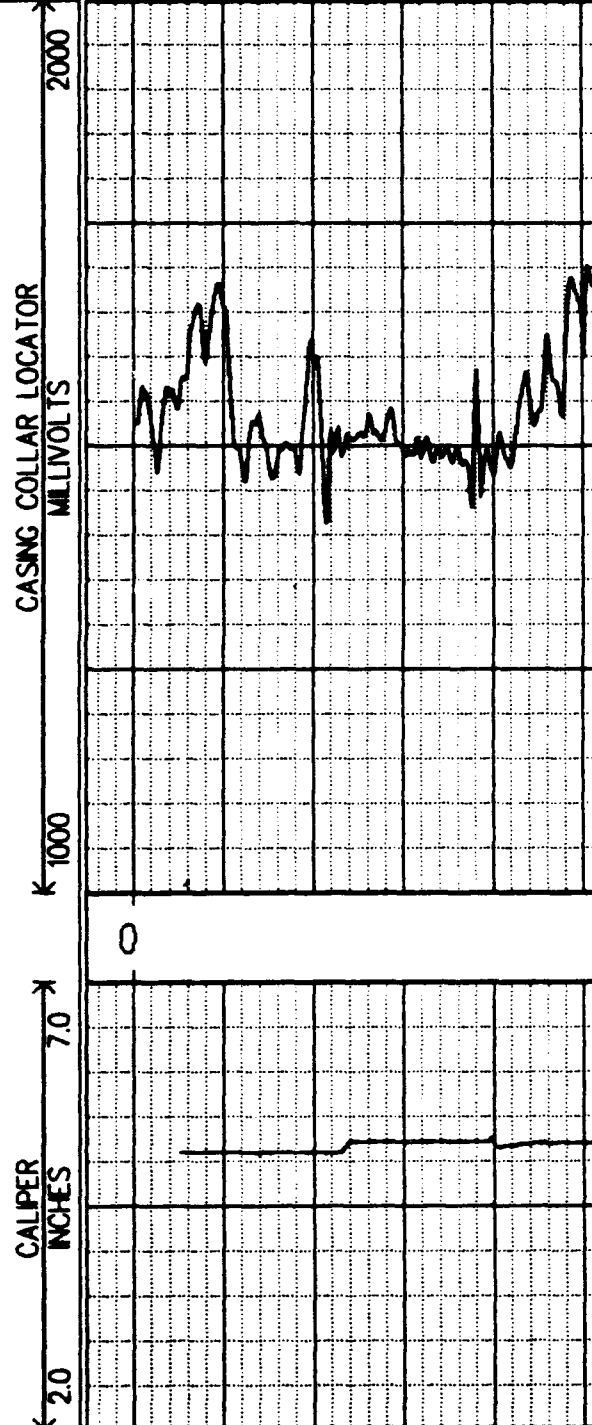
CALIBRATION FACTOR(S):

DIGITAL FILE NAME(S): 26A03.PWN, 26A03.PLP, 26A03.HDP

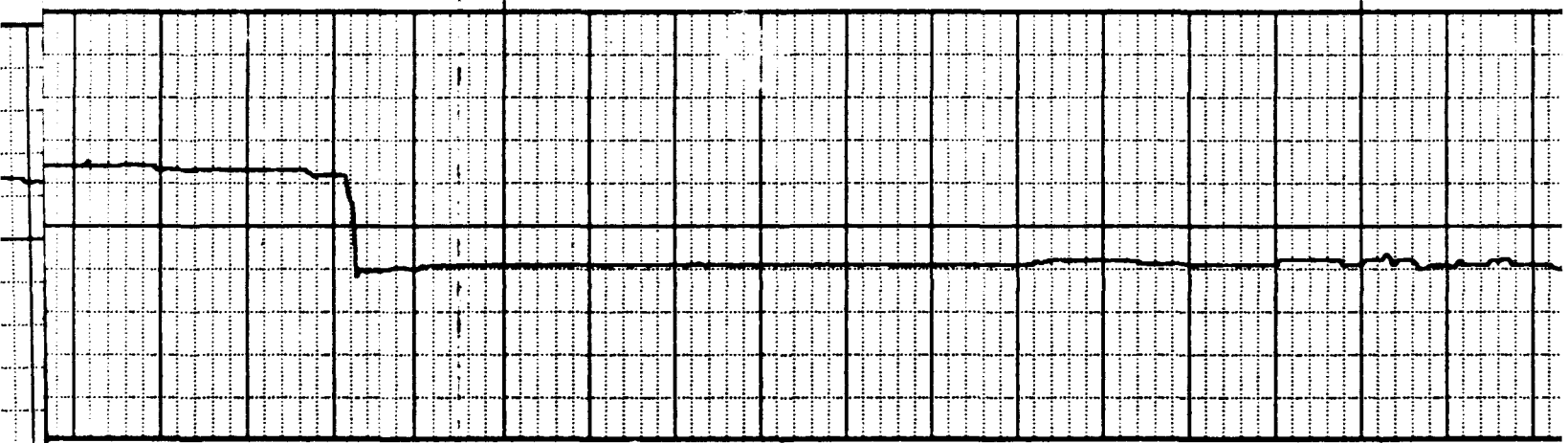
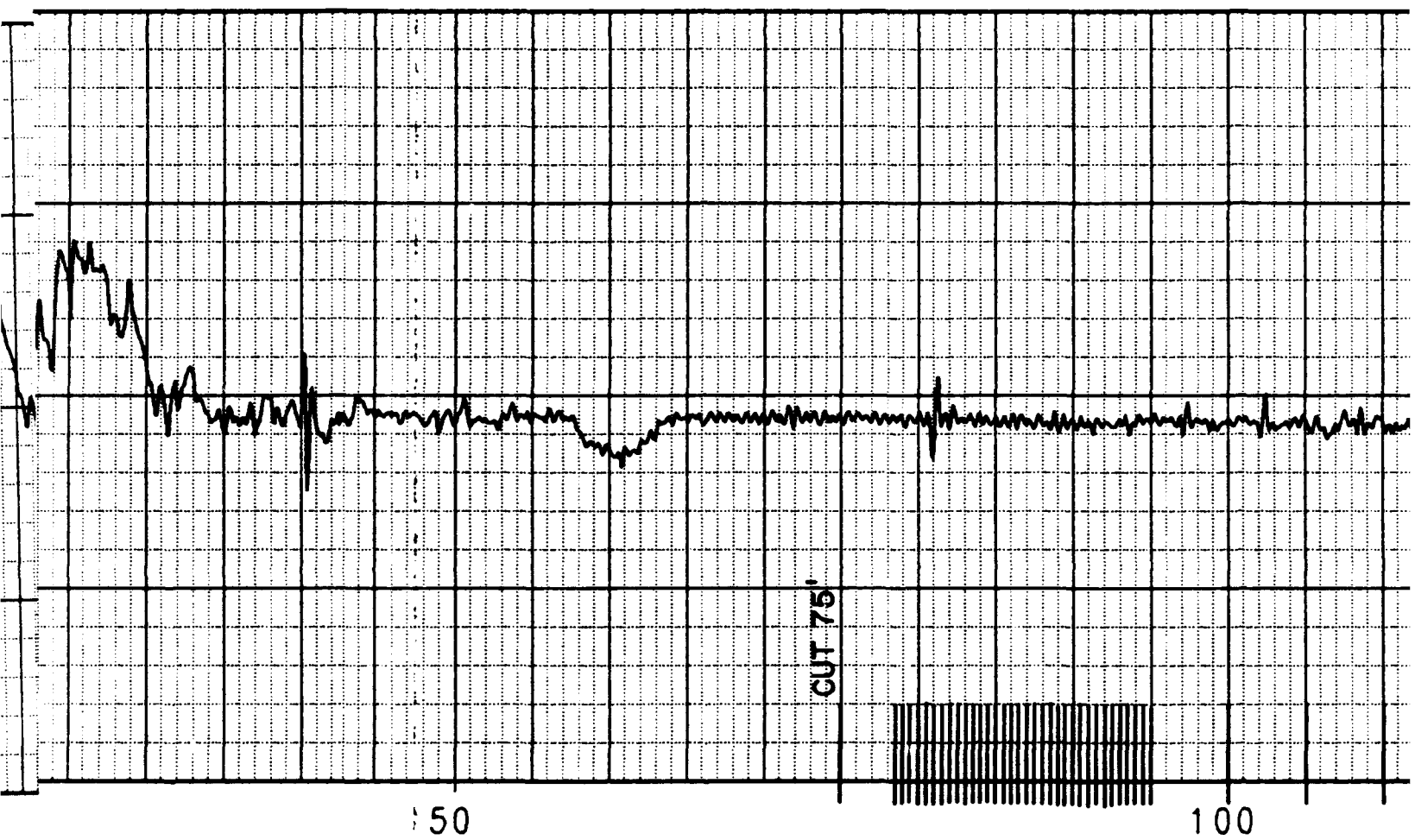
REMARKS:

REENTERED OLD HOLE.

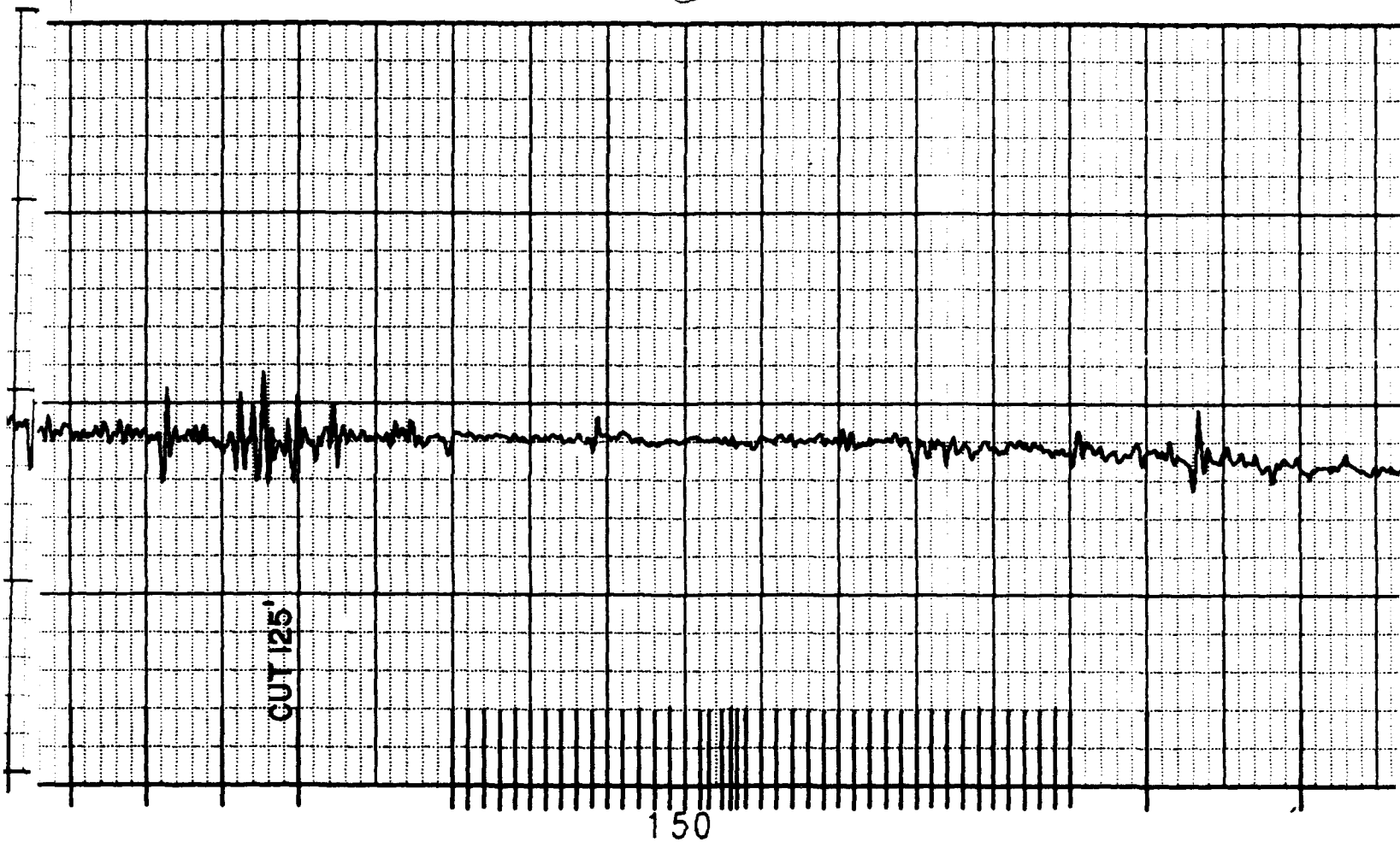
RMA TASK 37 WELL 26A03, 11 AUGUST 1988



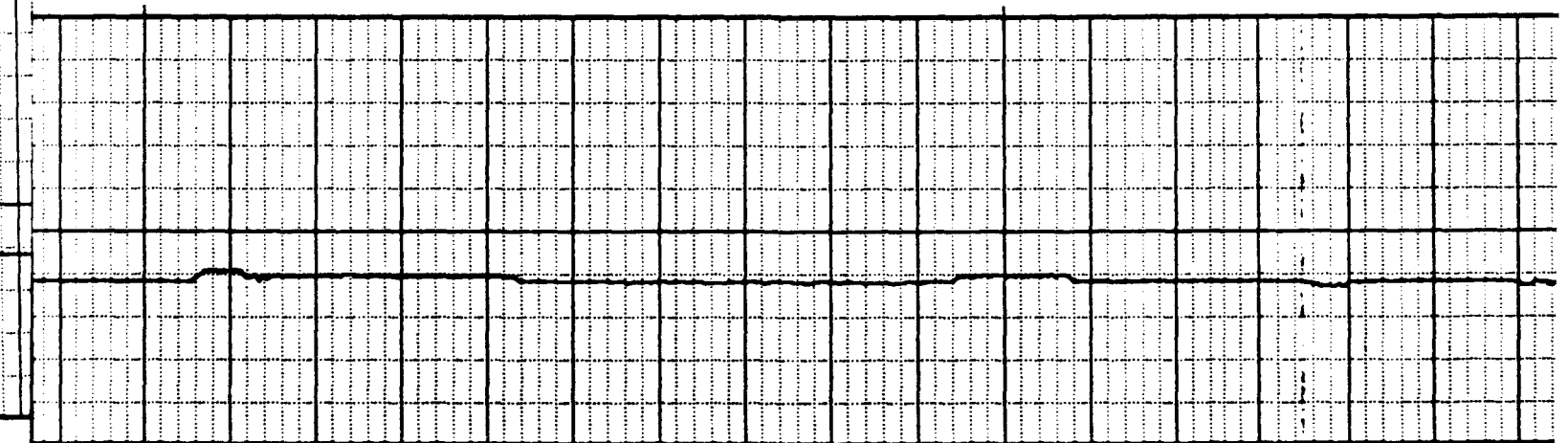
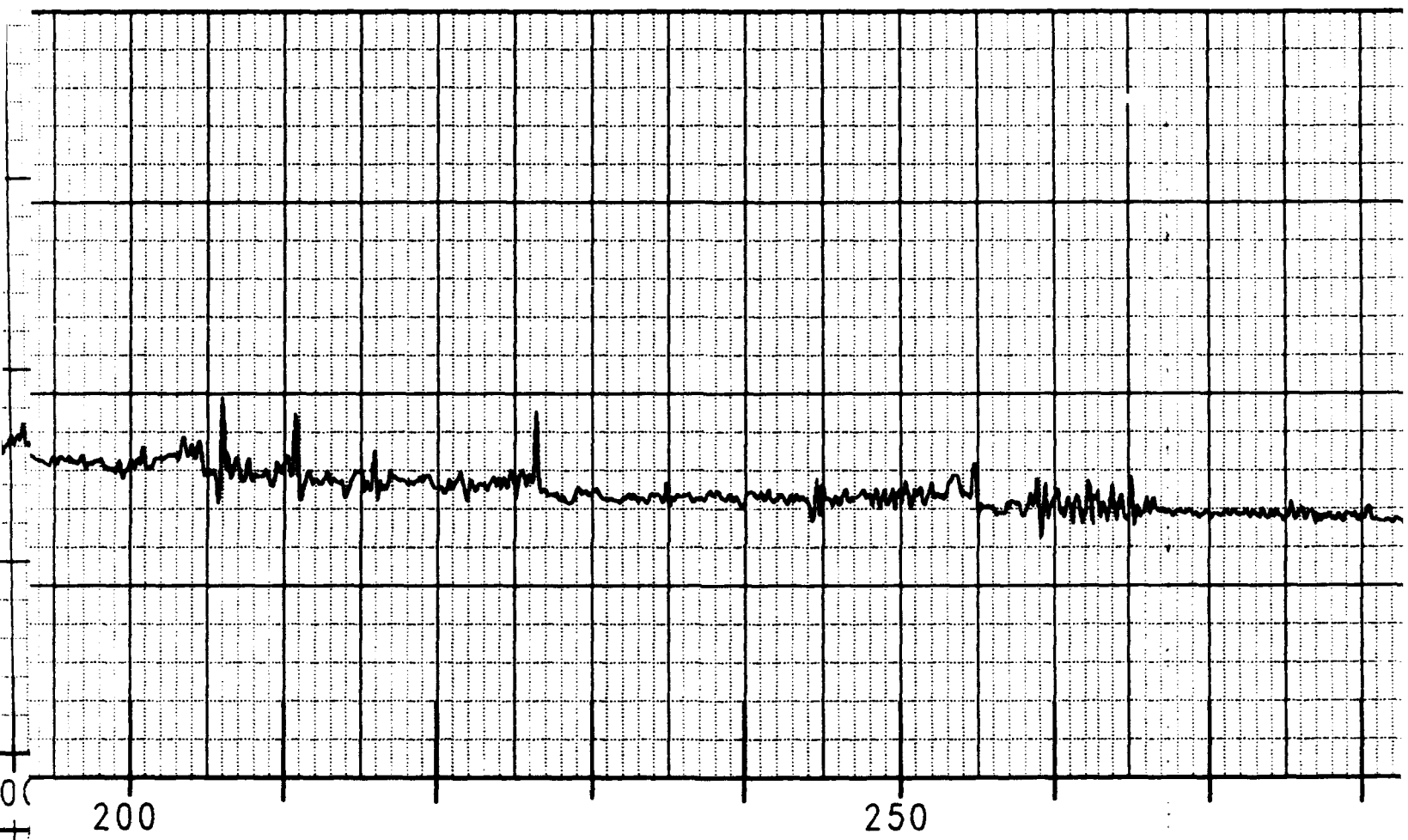
3



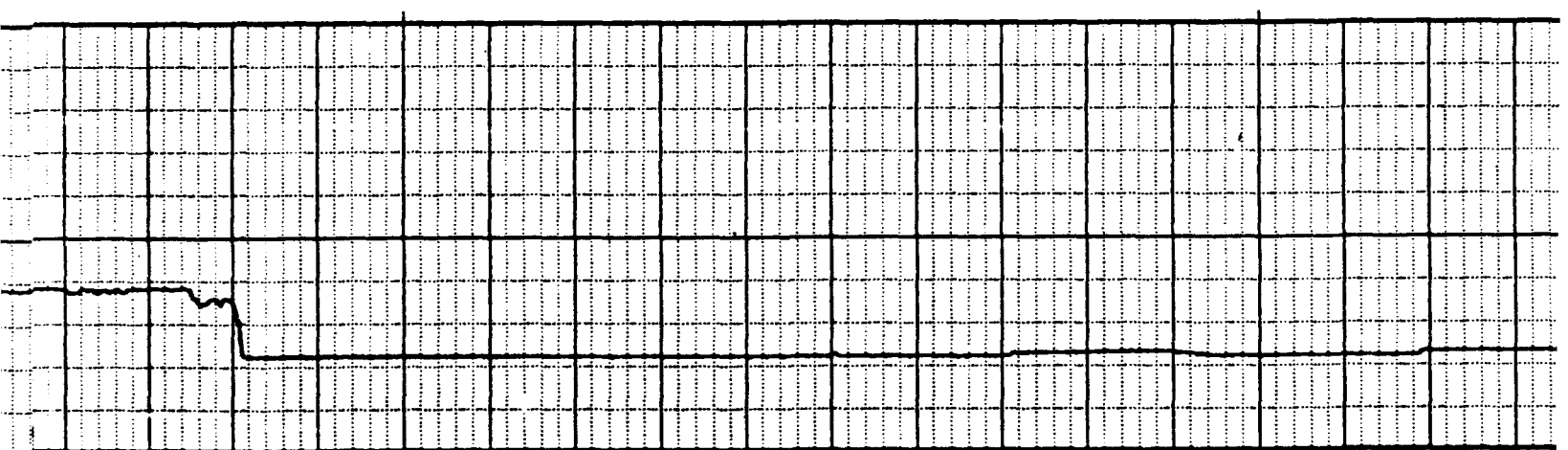
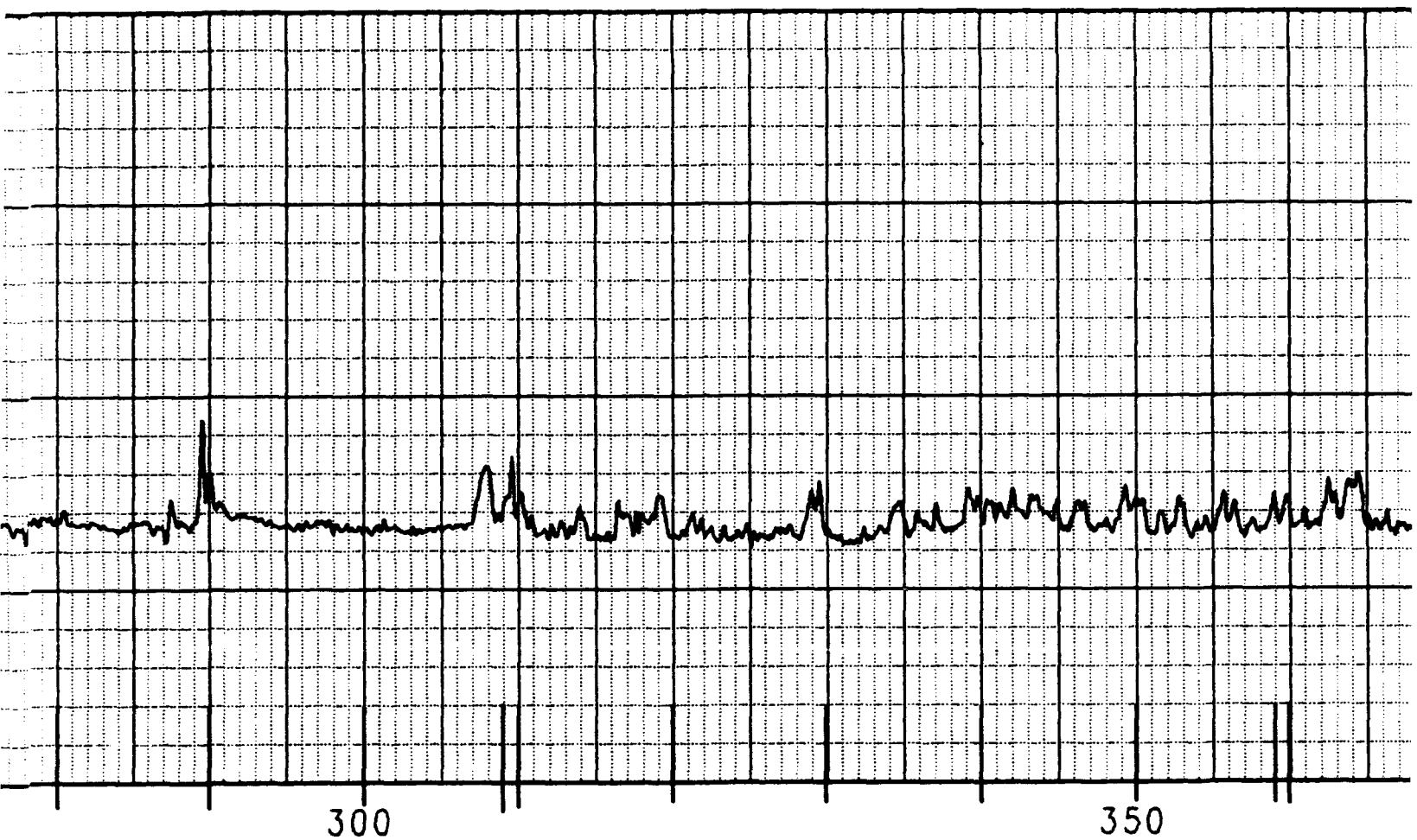
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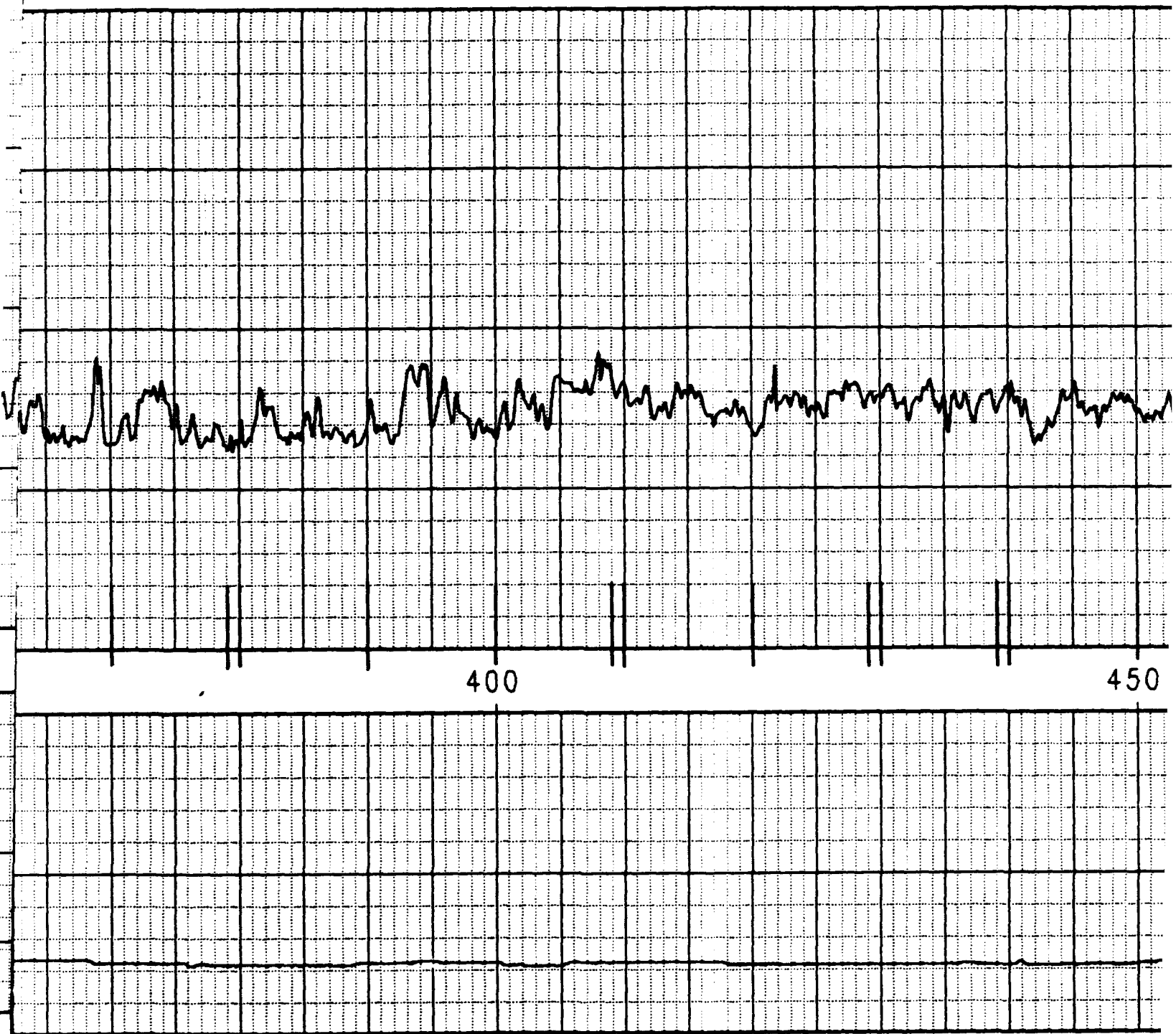
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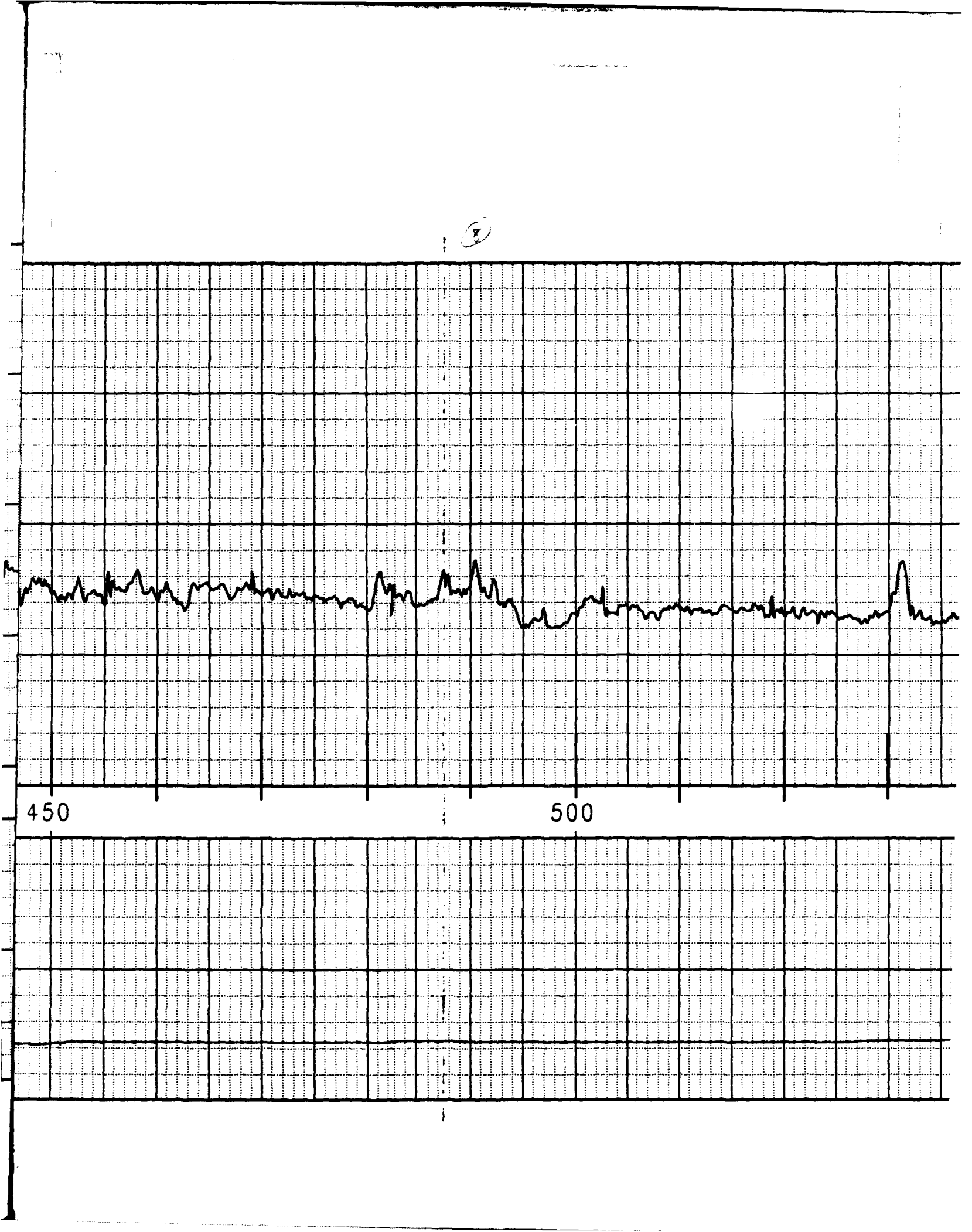


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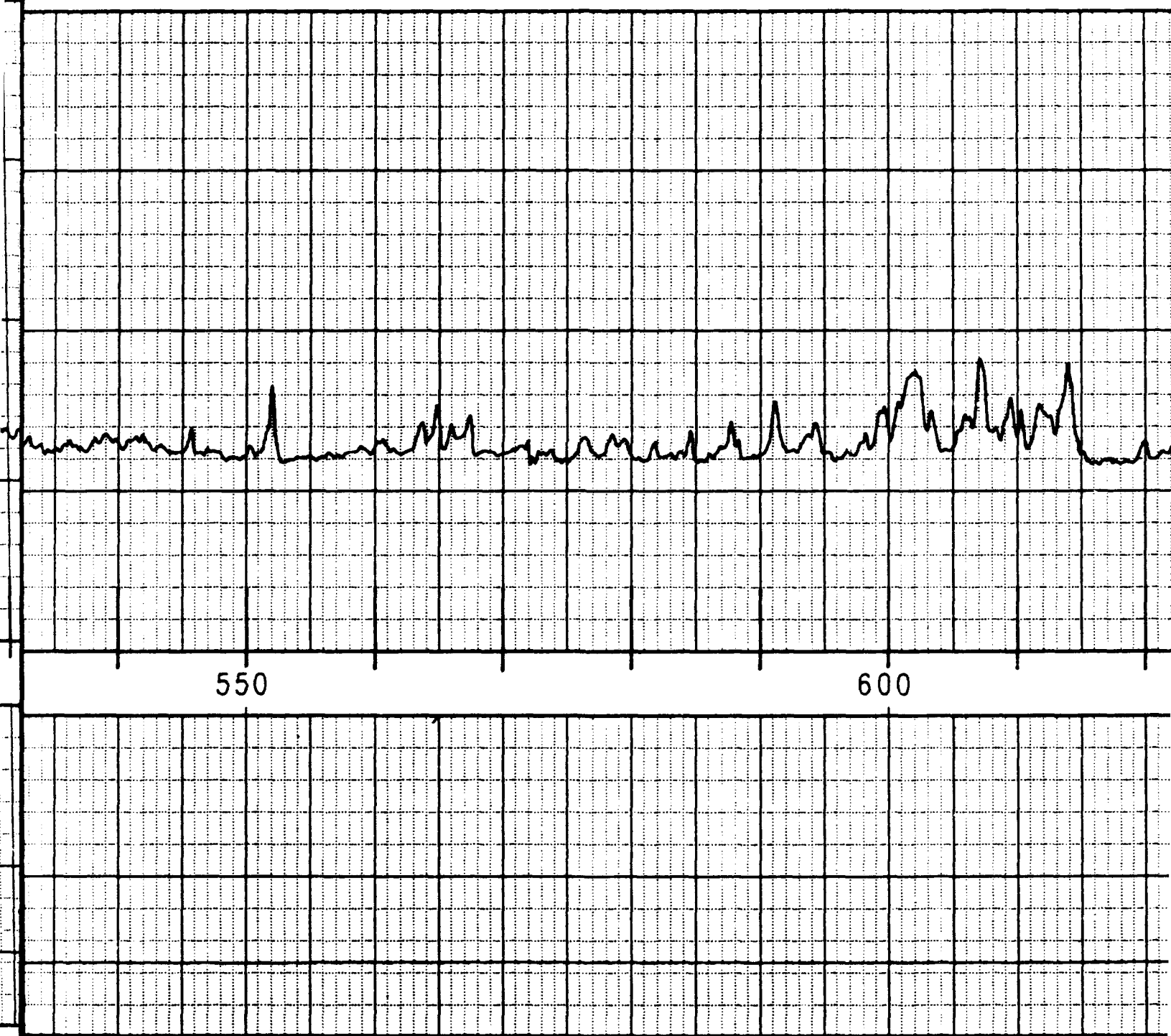


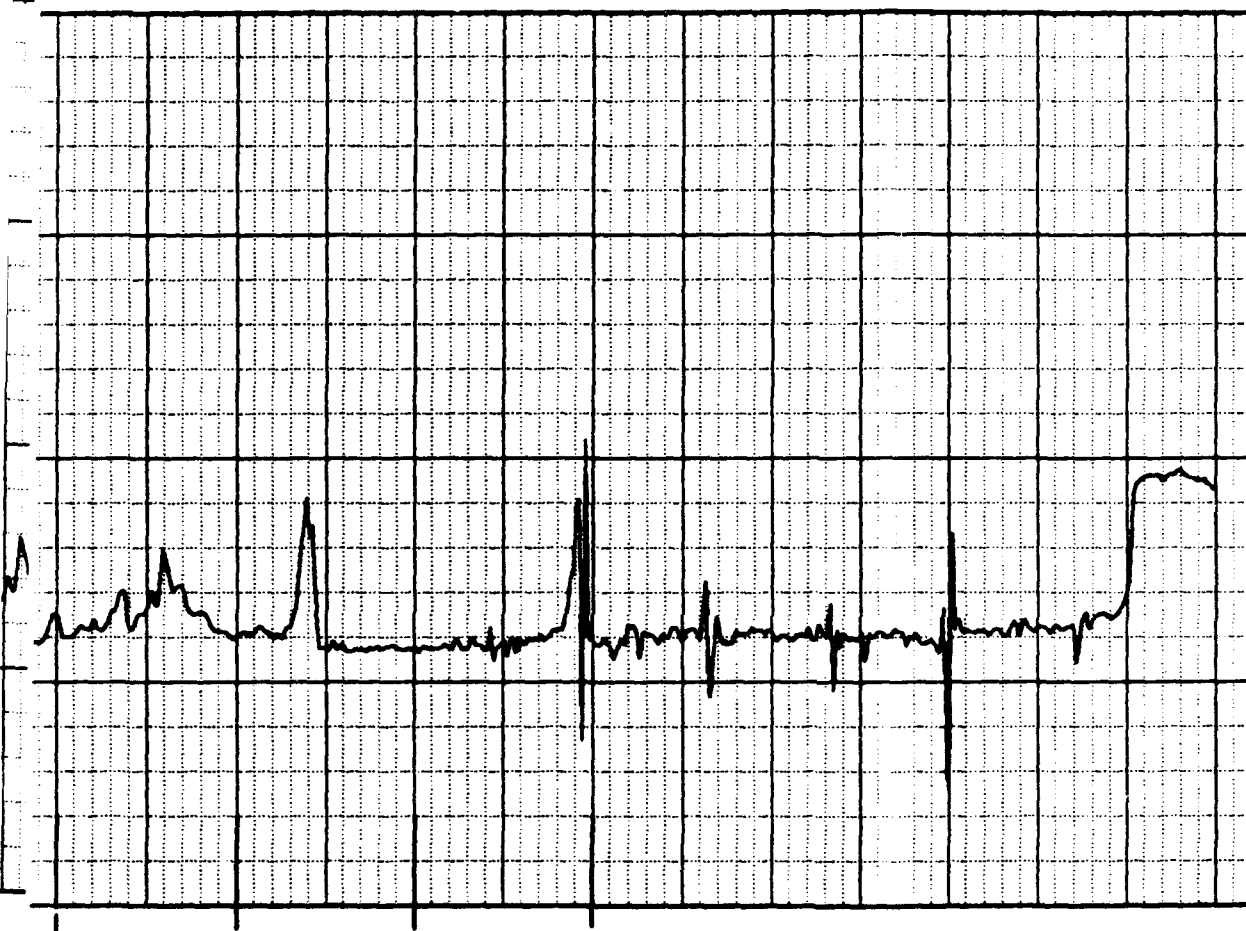
2



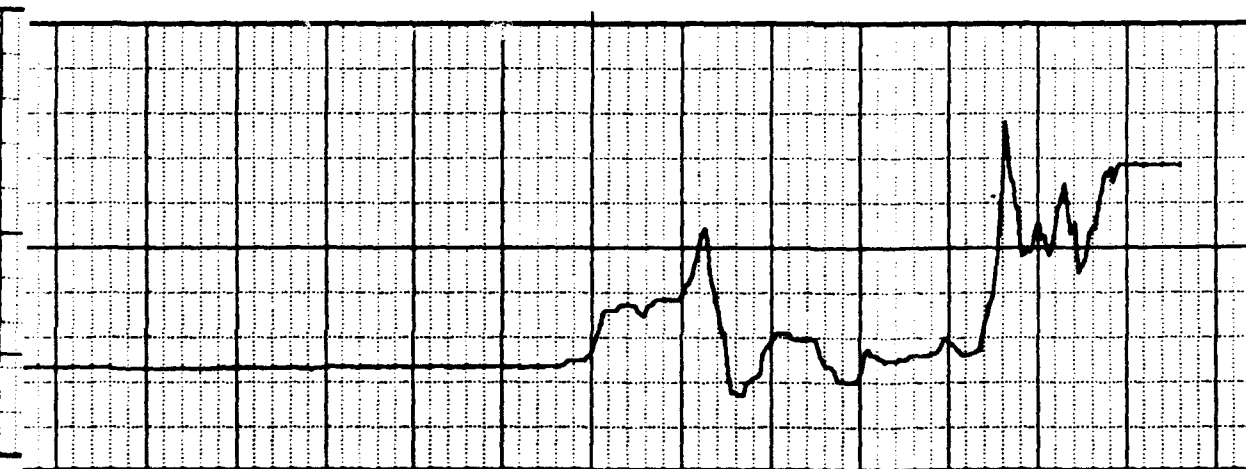


5





650



CALPER INCHES 2.0 7.0 CASING COLLAR LOCATOR MILLIVOLTS 1000 2000
RMA TASK 37 WELL 26A03, 11 AUGUST 1988

Prepared For:

Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate 23

Geophysical Logs Well 27A05
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



db.a. COLORADO WELL LOGGING

1019 8th ST. GOLDEN, COLORADO 80401
PHONE: (303) 279-0171 TELEX: 45-0286

COLLAR LOCATOR
CALIPER. GAMMA
WELL: 27A05

PROJECT: RMA - TASK 37

CLIENT: GERAGHTY & MILLER

LOCATION:

STATE: COLORADO

COUNTY: ADAMS

ELEV:

DEPTH REF: GL

BOREHOLE DATA

DRILLING CONTRACTOR: LAYNE

CUSTOMER TD: COLOG TD: 450'

DATE: MAY 18, 1988

COLOG ID NO:

BIT RECORD		CASING RECORD	
NO.	Bit Size	From	To
1			
2			
3			
4			

HOLE MEDIUM:

MUD TYPE:

VISCOSITY:

DRILL METHOD:

TIME SINCE CIRC:

Rm:

WEIGHT:

at

Deg

GENERAL DATA

INSTRUMENTATION: EG&G MT. SOPRIS SERIES III

LOGGING ENGINEER: BOB CROWDER / TOM STAATZ

CLIENT REP: LUKE DARRAUGH

OTHER SERVICES:

UNIT/TRUCK: 245 / 19

11-11-11

LOG FUNCTION	RUN NO.	MODEL	EQUIPMENT		LOGGING INSTRUMENT TYPE	LOGGING SPEED FT./MIN.	DETECTOR TYPE	SPACING		SOURCE TYPE	SOURCE SIZE CURIE	LOGGED INTERVAL	
			PROBE S.N.	UPHOLE S.N.				Y _x -R _x FEET	R _x -R _y FEET			FROM	TO
CALIPER	3	3 ARM	NSN	ALM	0.1	20						430'	430'
GAMMA	1	ALP		ALM	0.1	20	Nd					430'	430'
COLLAR LOC.	2	CCL	NSN	ALM	0.1	20						430'	430'

LOGGING DATA

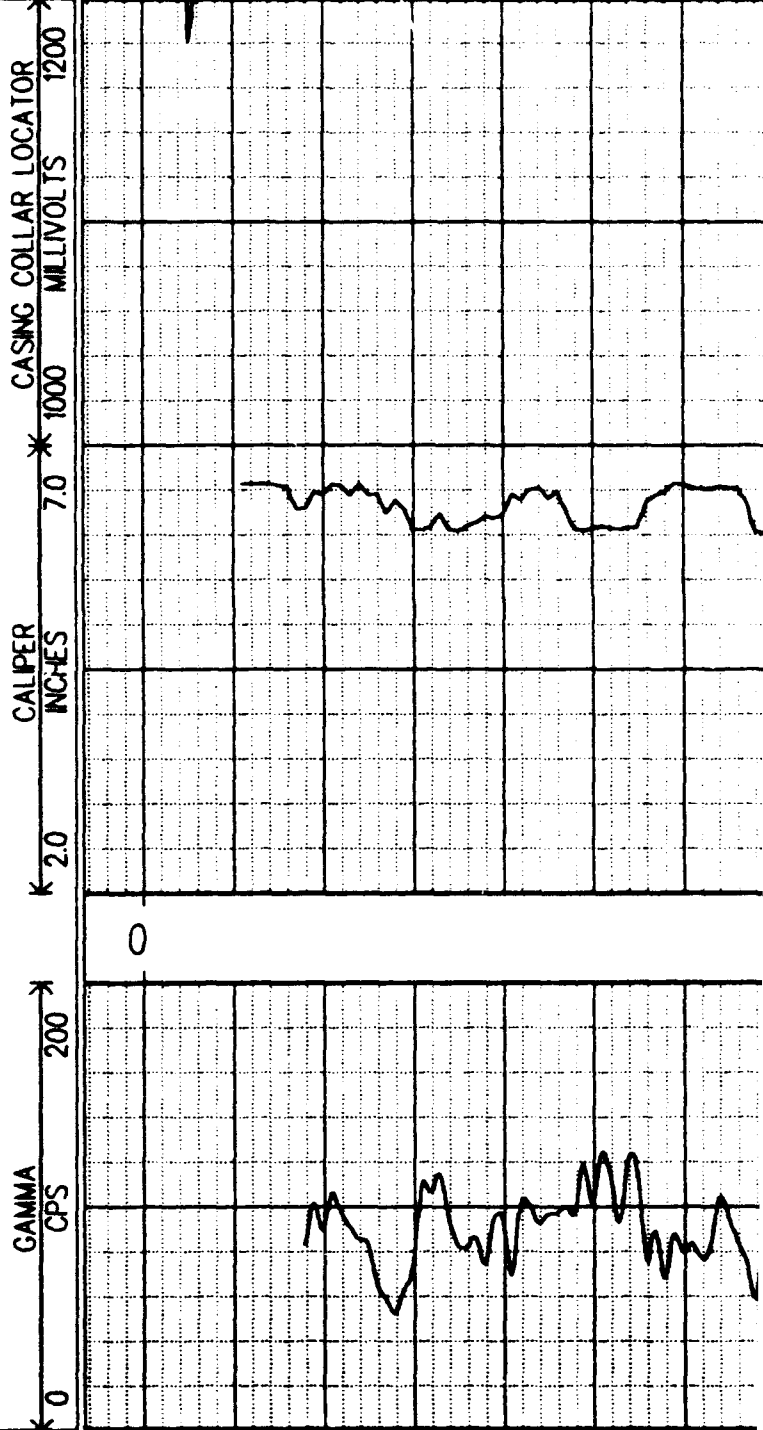
CALIBRATION FACTOR(S):

DIGITAL FILE NAME(S): 27A05.DAT, 27A05.PLP 27A05.HDP

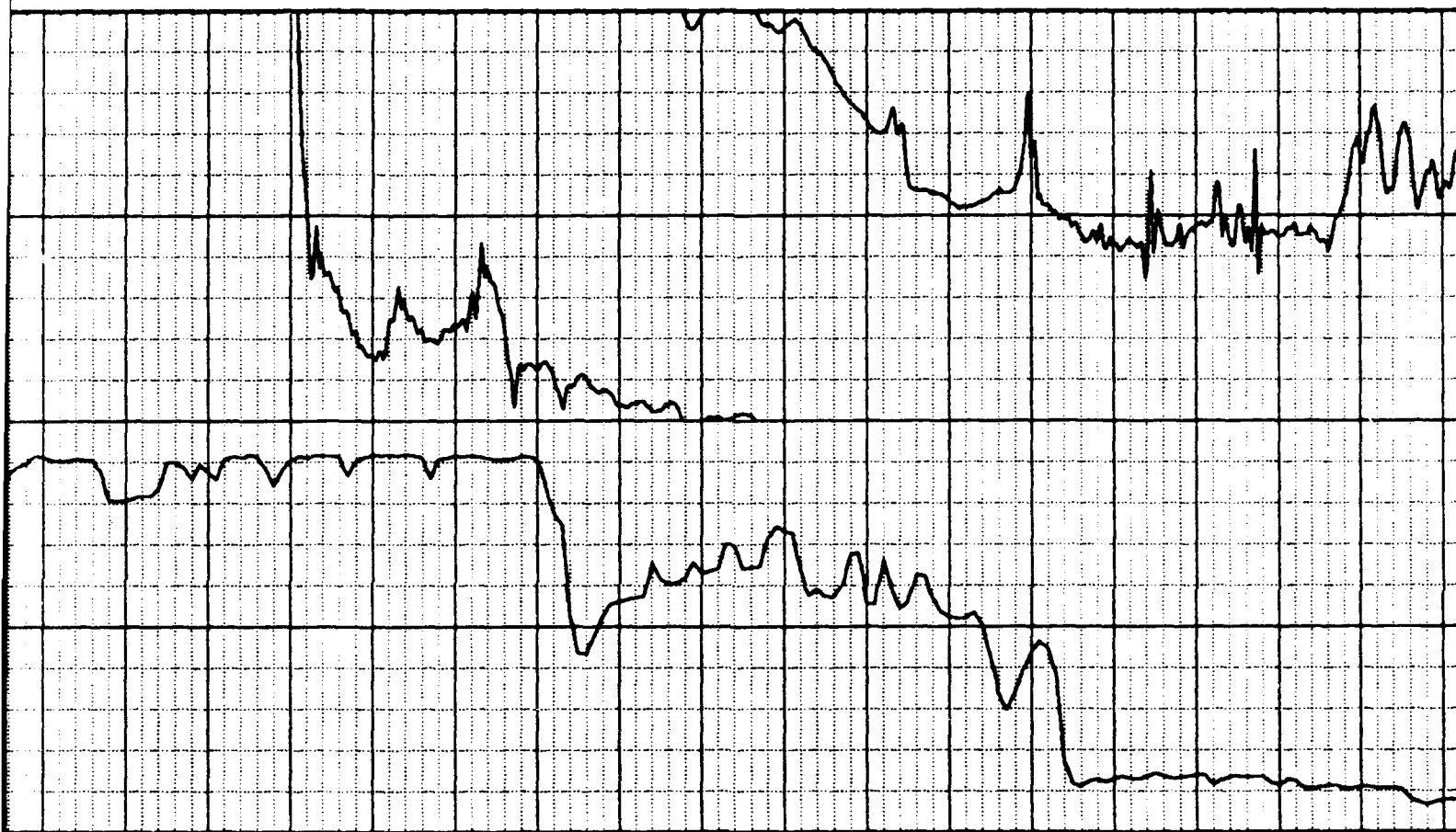
REMARKS:

OLD HOLE. 95' OF CASING WAS PULLED.

RMA TASK 37 WELL 27A05, MAY 18, 1988

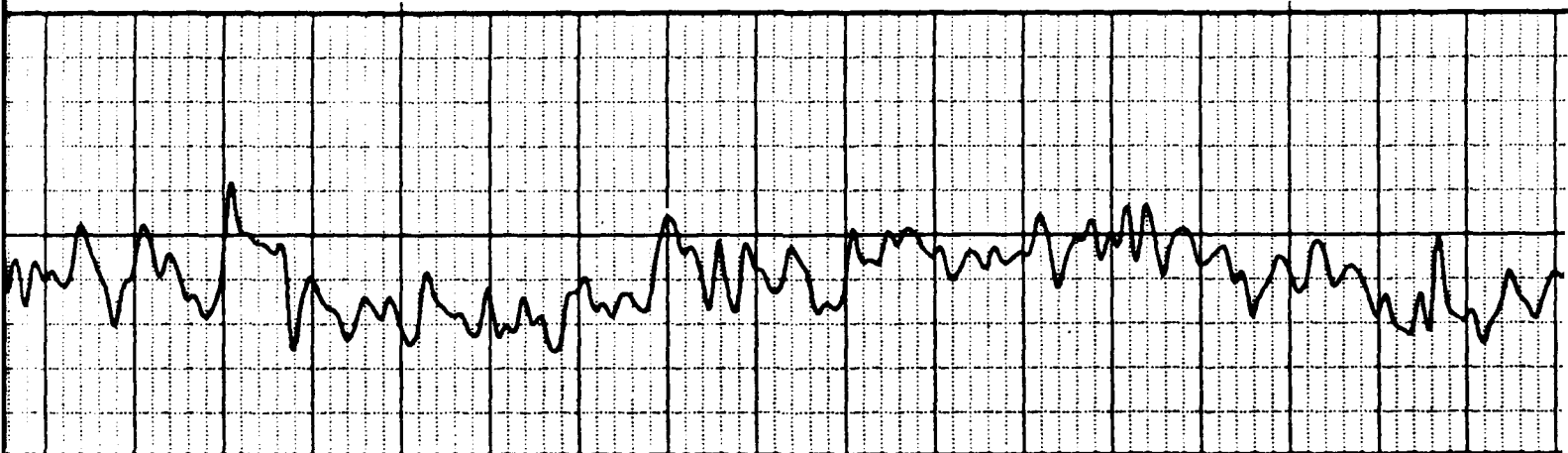


2



50

100

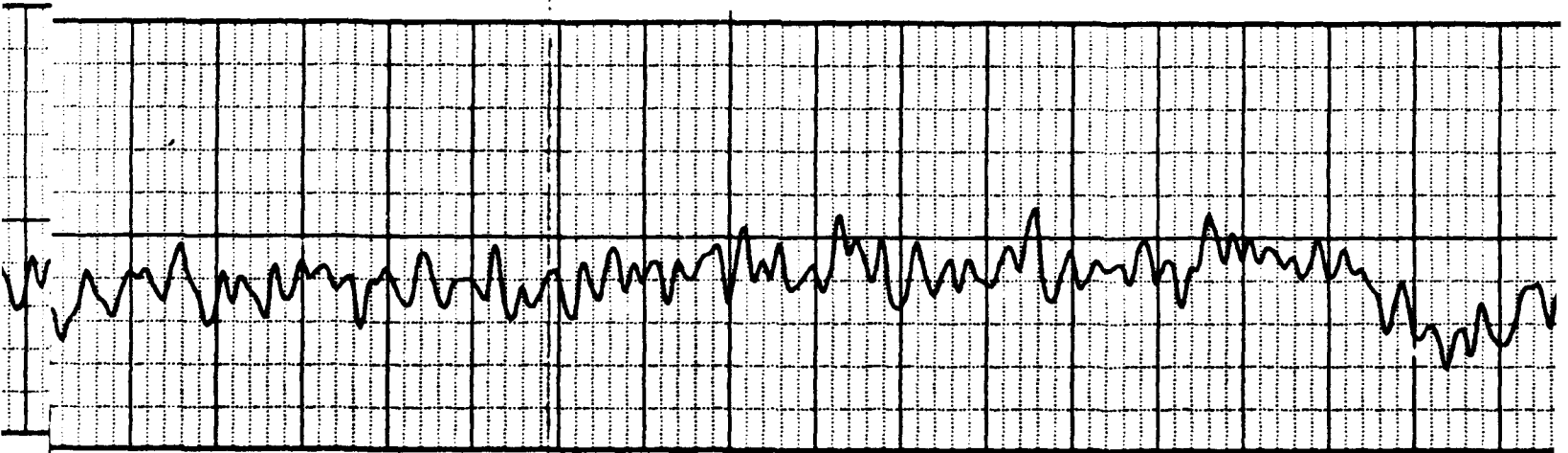


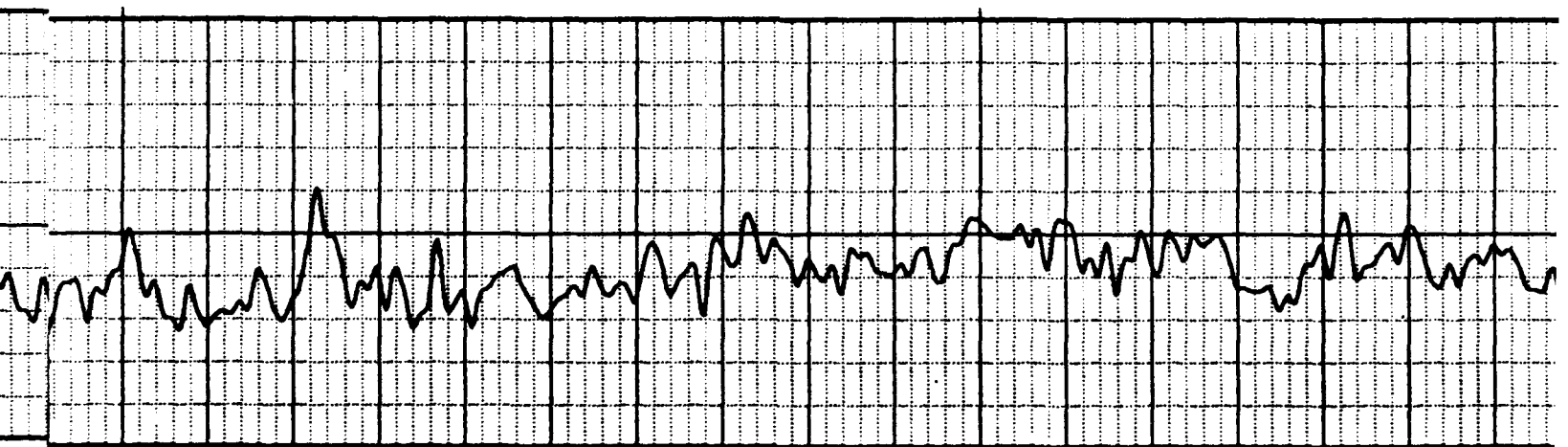
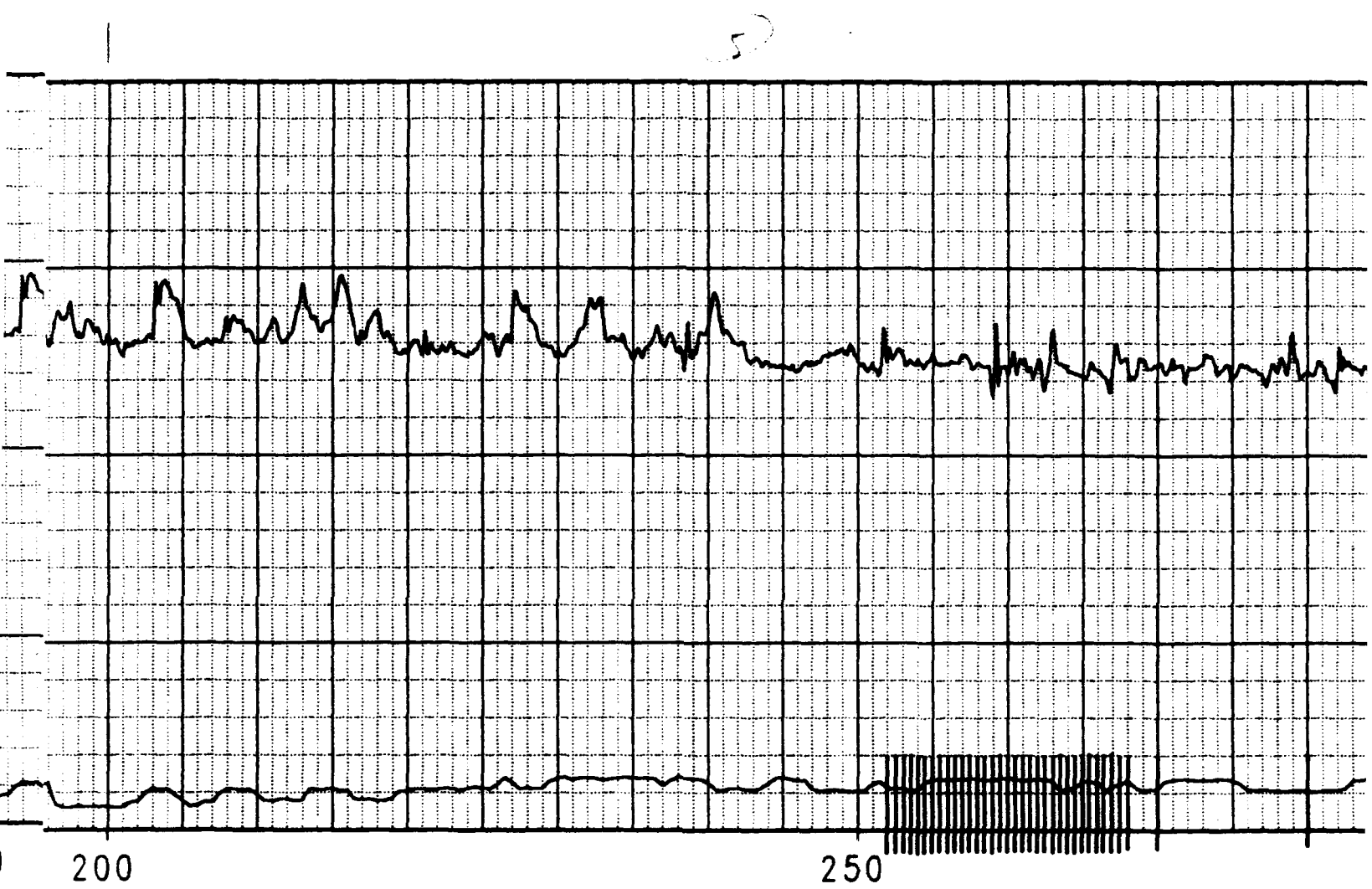
④

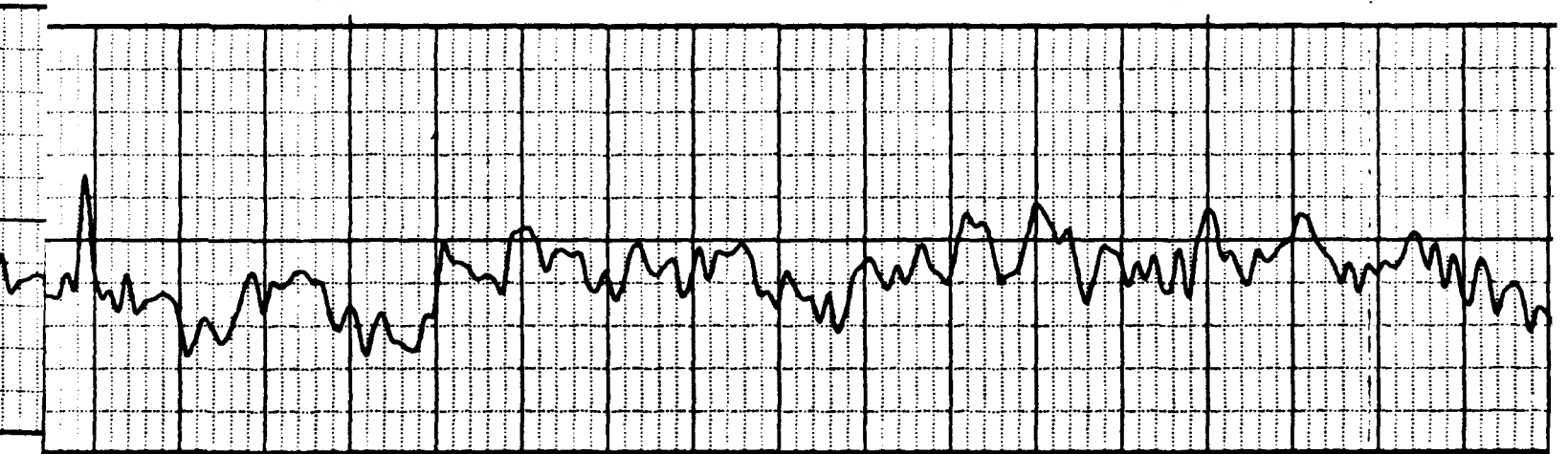
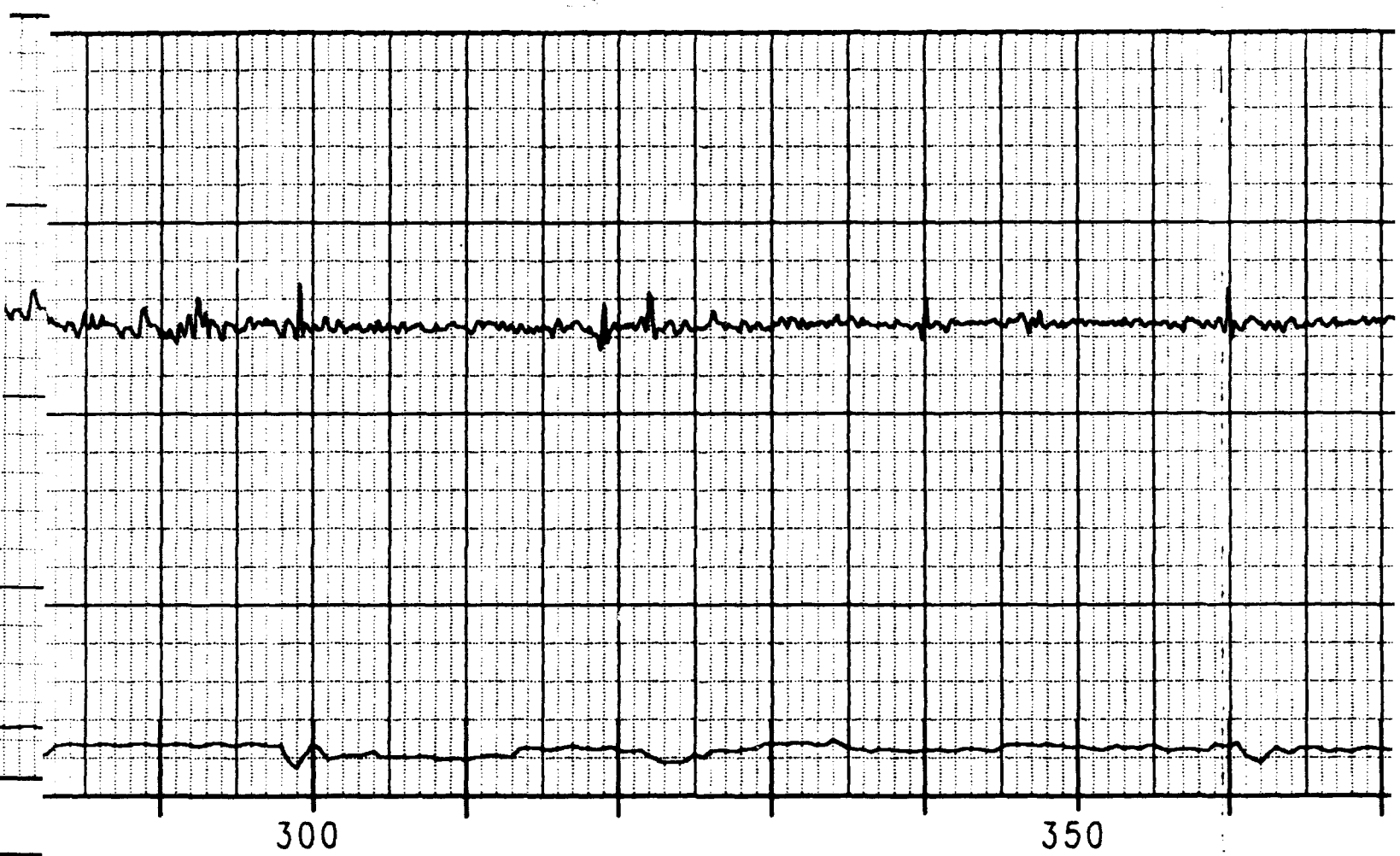


150

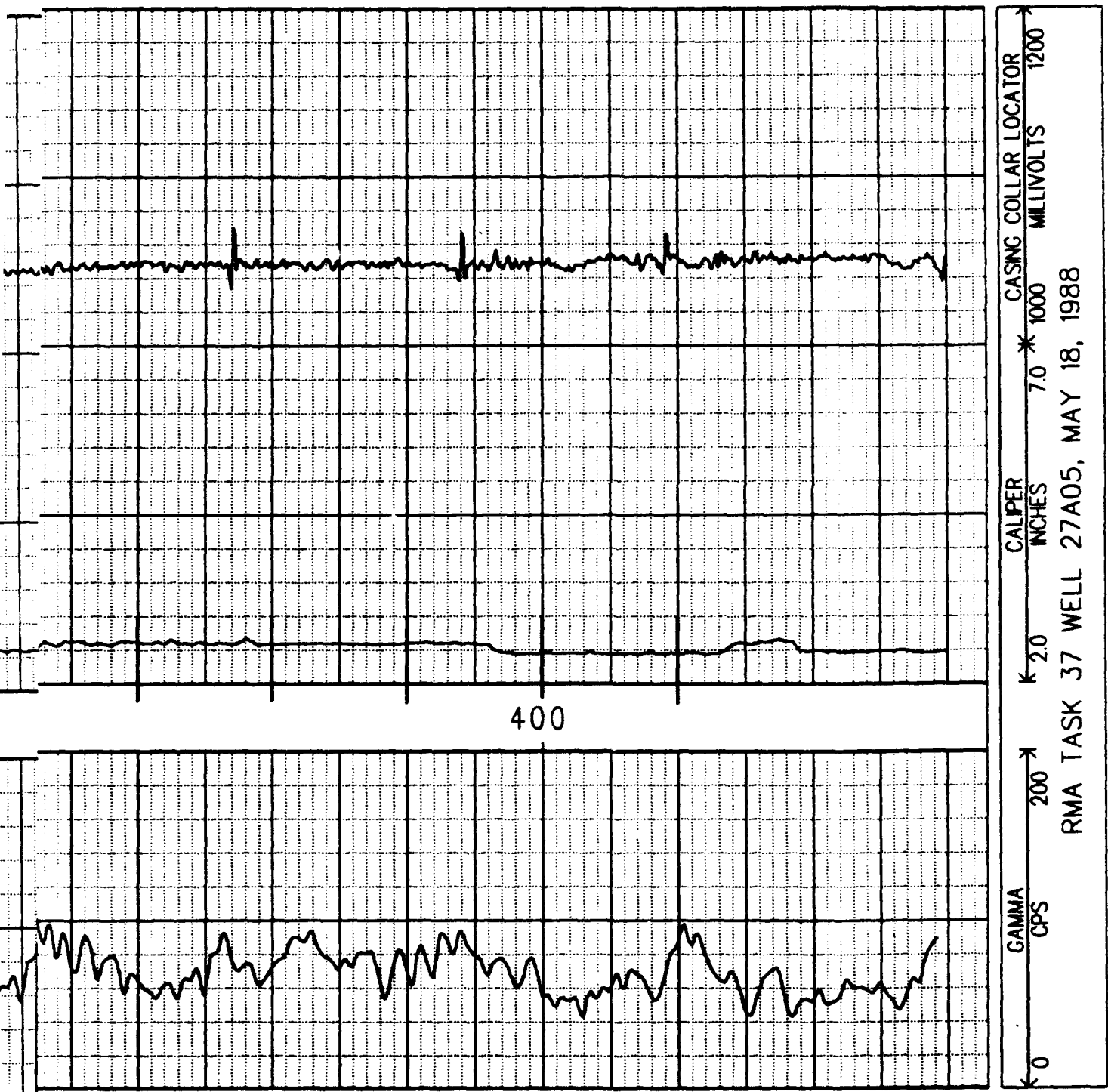
2







2



Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

Plate 24

Geophysical Logs Well 33A04
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



d.b.a. COLORADO WELL LOGGING
1019 8th ST. GOLDEN, COLORADO 80401
PHONE: (303) 279-0171 TELEX: 45-0286

CALIPER
CASING LOCATOR
WELL: 33A04

PROJECT: RMA TASK 37
CLIENT: GERAGHTY & MILLER
LOCATION: SEC 33 T3S R67W
STATE: COLORADO COUNTY: ADAMS
DATE: 30 AUGUST 1988
COLOG ID NO:
ELEV: DEPTH REF: G.L.

BOREHOLE DATA

DRILLING CONTRACTOR: LAYNE WESTERN
CUSTOMER TD: 511' COLOG TD: 353'

BIT RECORD		CASING RECORD	
RUN NO.	Bit Size	From	To
1	3.5"	511"	SURF
2			
3			
4			

HOLE MEDIUM: OLD HOLE
MUD TYPE:
VISCOSITY:
DRILL METHOD: ROTARY
TIME SINCE CIRC: 1/4 HOUR
Rm: at Deg

GENERAL DATA

INSTRUMENTATION: EG&G MT. SOPRIS SERIES III
LOGGING ENGINEER: CROWDER / STAATZ
CLIENT REP: MR. JOHN CUMMINGS - / MR. BILL BARRHAM
OTHER SERVICES:
UNT/ TRUCK: 245 / 19

CLIENT REP: MR. JOHN CUMMINGS / MR. BILL BARHAM

OTHER SERVICES:

LOGGING DATA

LOG FUNCTION	RUN NO.	MODEL	EQUIPMENT PROBE S.N.	UPHOLE S.N.	DIG IN SPEED FEET	LOGGING SPEED FT./MIN	DETECTOR TYPE	SPACING TX-RX FEET	RX-RX FEET	SOURCE TYPE	SIZE CURIE	LOGGED INTERVAL FROM TO	INT. FEET
CALIPER	1	3ARM	NSN	FLM	0.1	20						353'	349'
CASING LOC.	2	CCL	666	ALM	0.1	20						353'	SURF

CALIBRATION FACTOR(S): 4.5" RING 2337.272 7.0" RING 3534.590

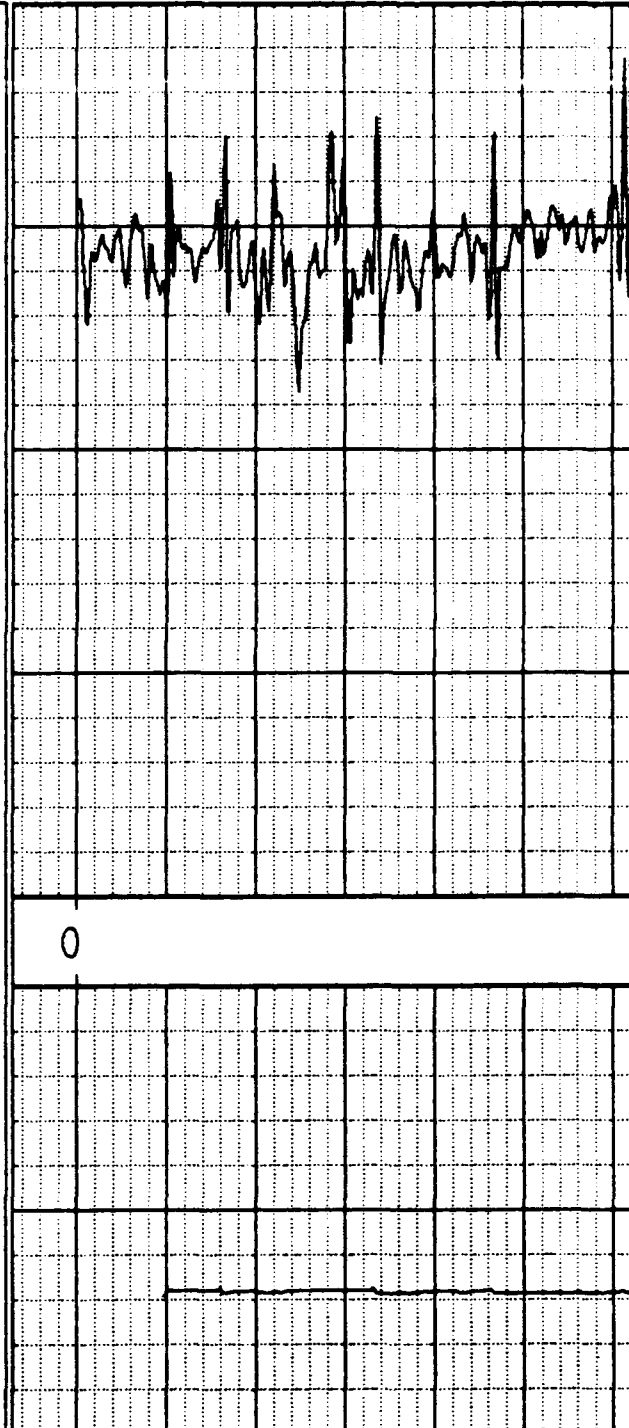
DIGITAL FILE NAME(S): 33A04CALFE2, 33A04PLP, 33A04HDP

REMARKS:

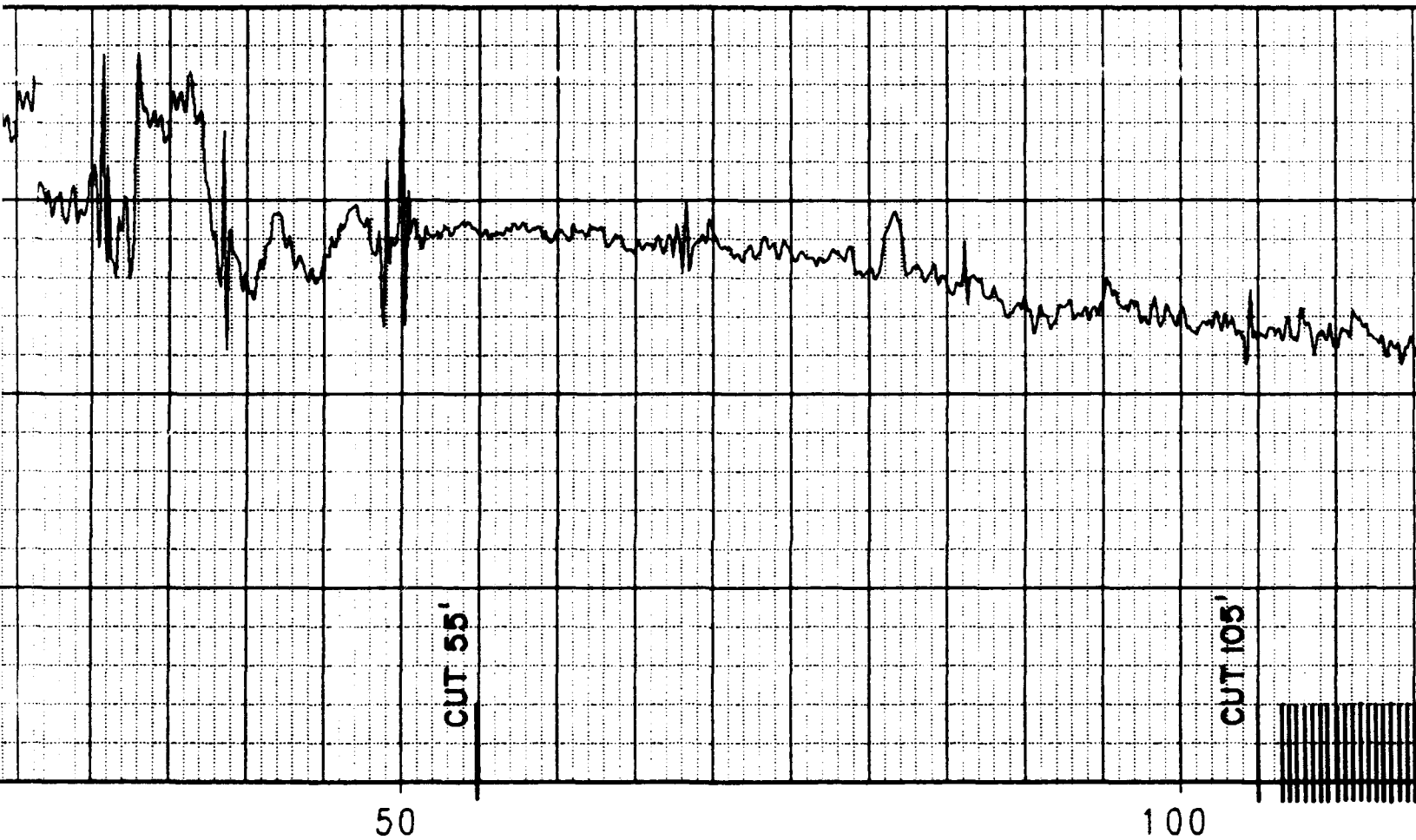
BRIDGE AT 353 FEET. LOGGED FROM 353 FEET TO SURFACE.

TASK 37 WELL 33A04, 30 AUGUST 1988

CALIPER INCHES	12	K 150	CASING COLLAR LOCATOR MILLIVOLTS	650
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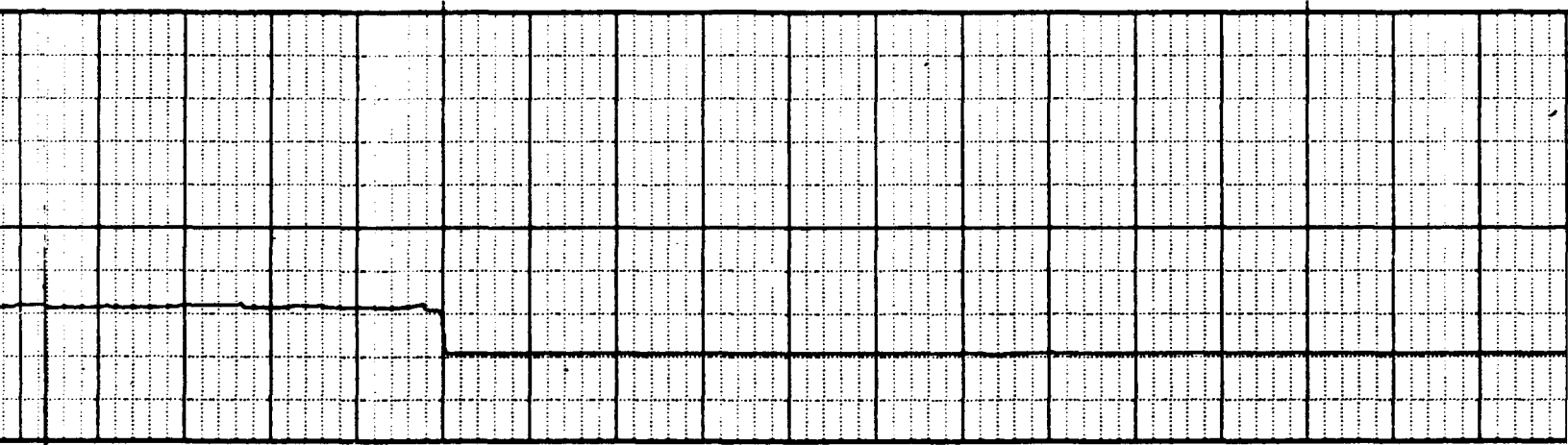


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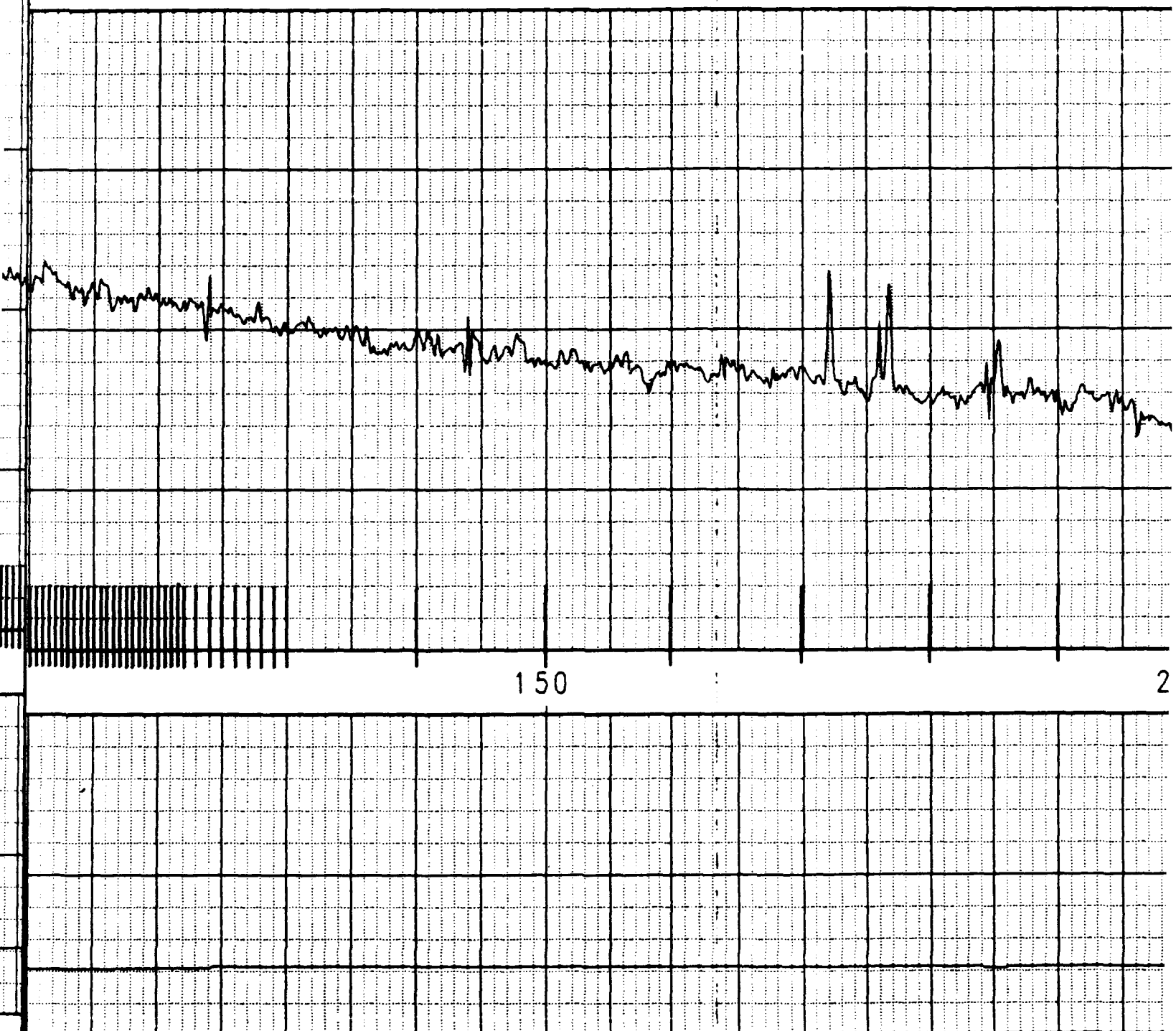


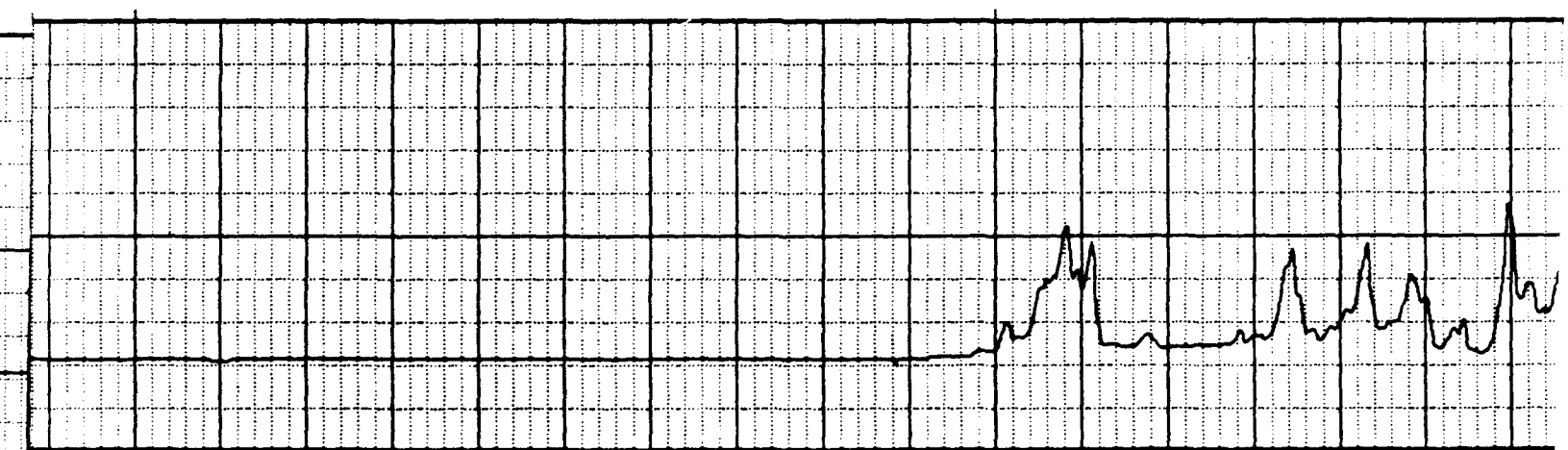
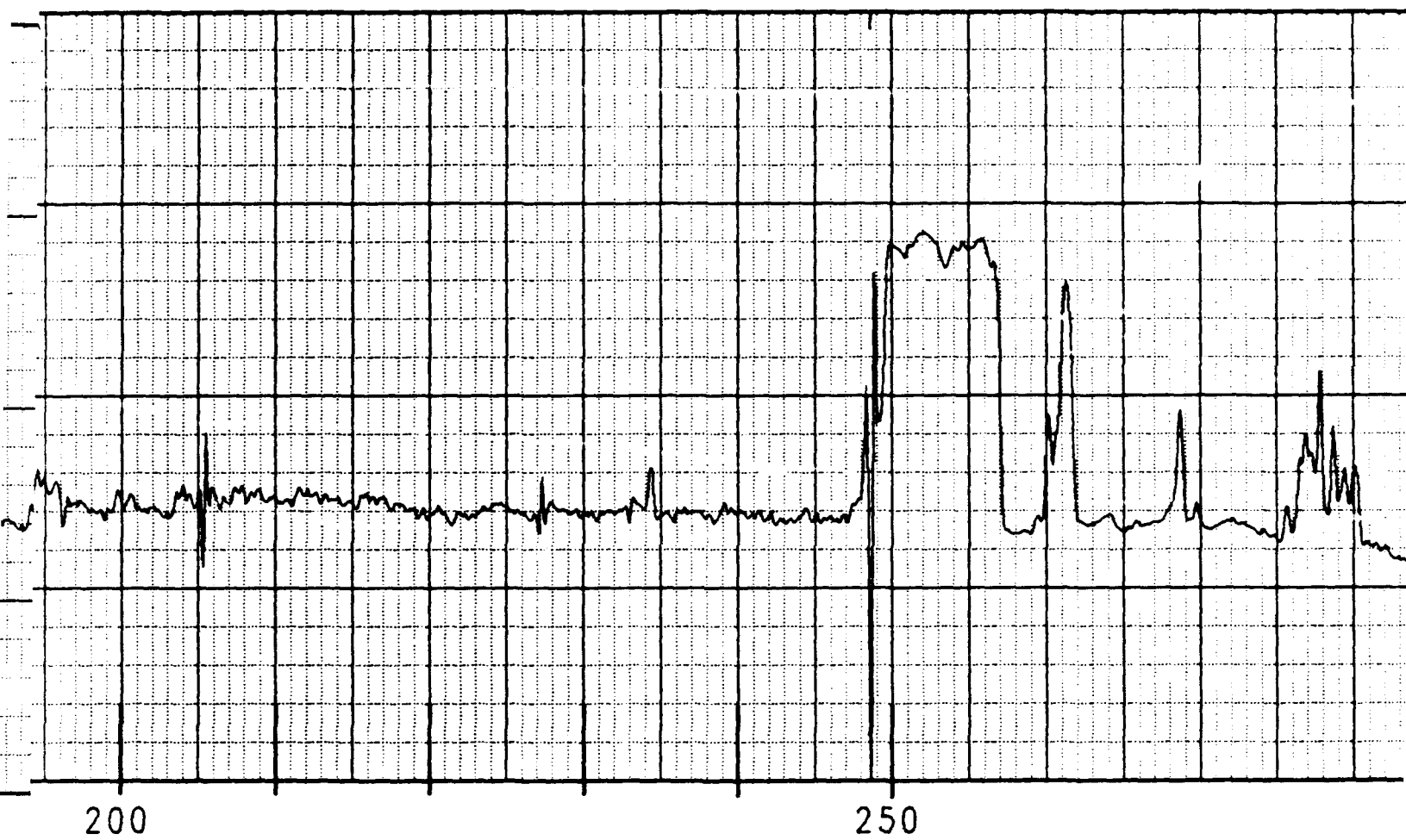
50

100

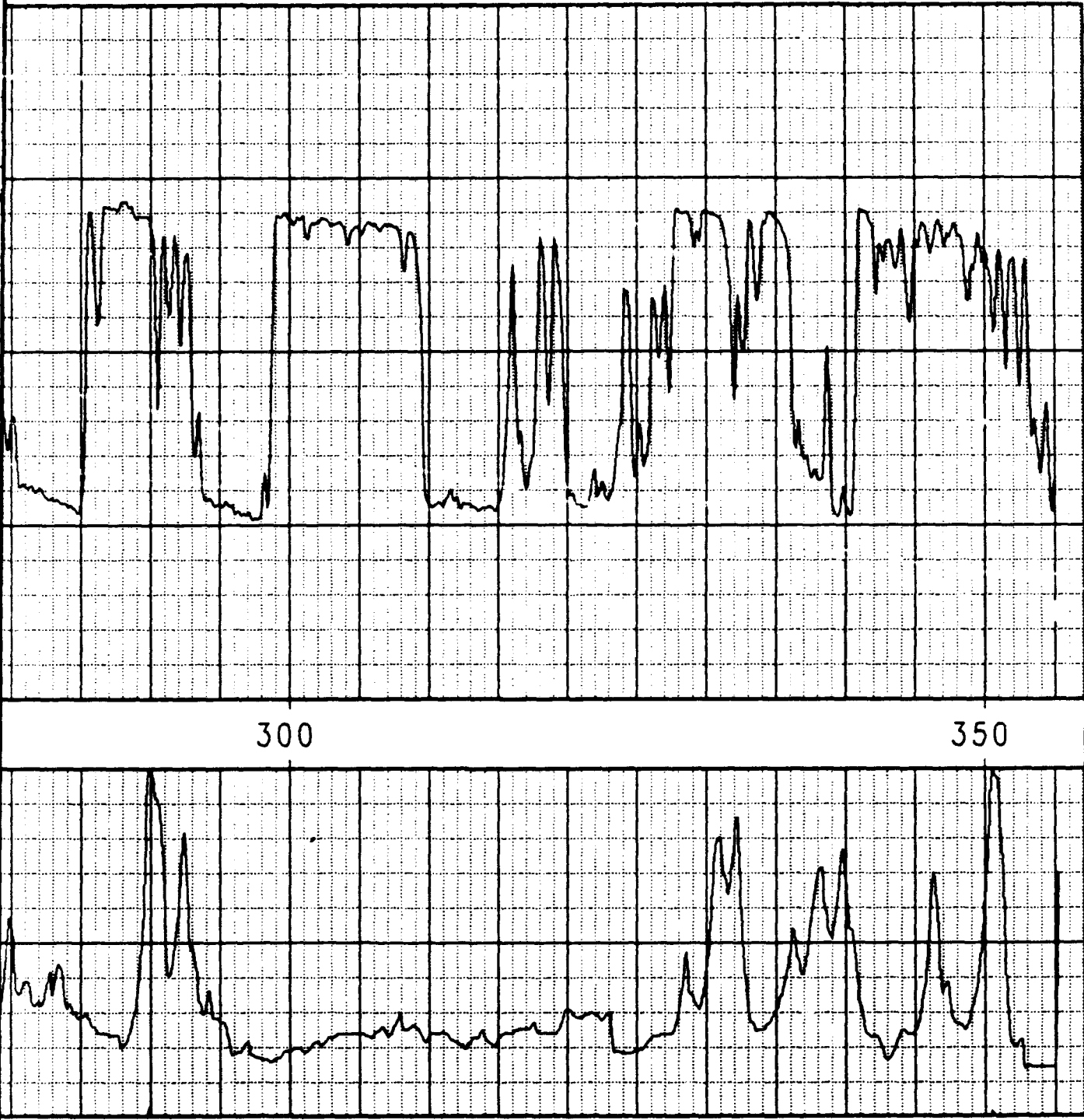


4





6



CASING COLLAR LOCATOR

650

MILLIVOLTS

K 150

12

CALIPER
INCHES

2

TASK 37 WELL 33A04, 30 AUGUST 1988

2170000

190000

190000

28

190000

275000

280000

East 9th Avenue
Tenth Street

A04

163
164

062

22

23

7th Street

10th Avenue

10th Avenue

044
043
046

A03

Reservoir T

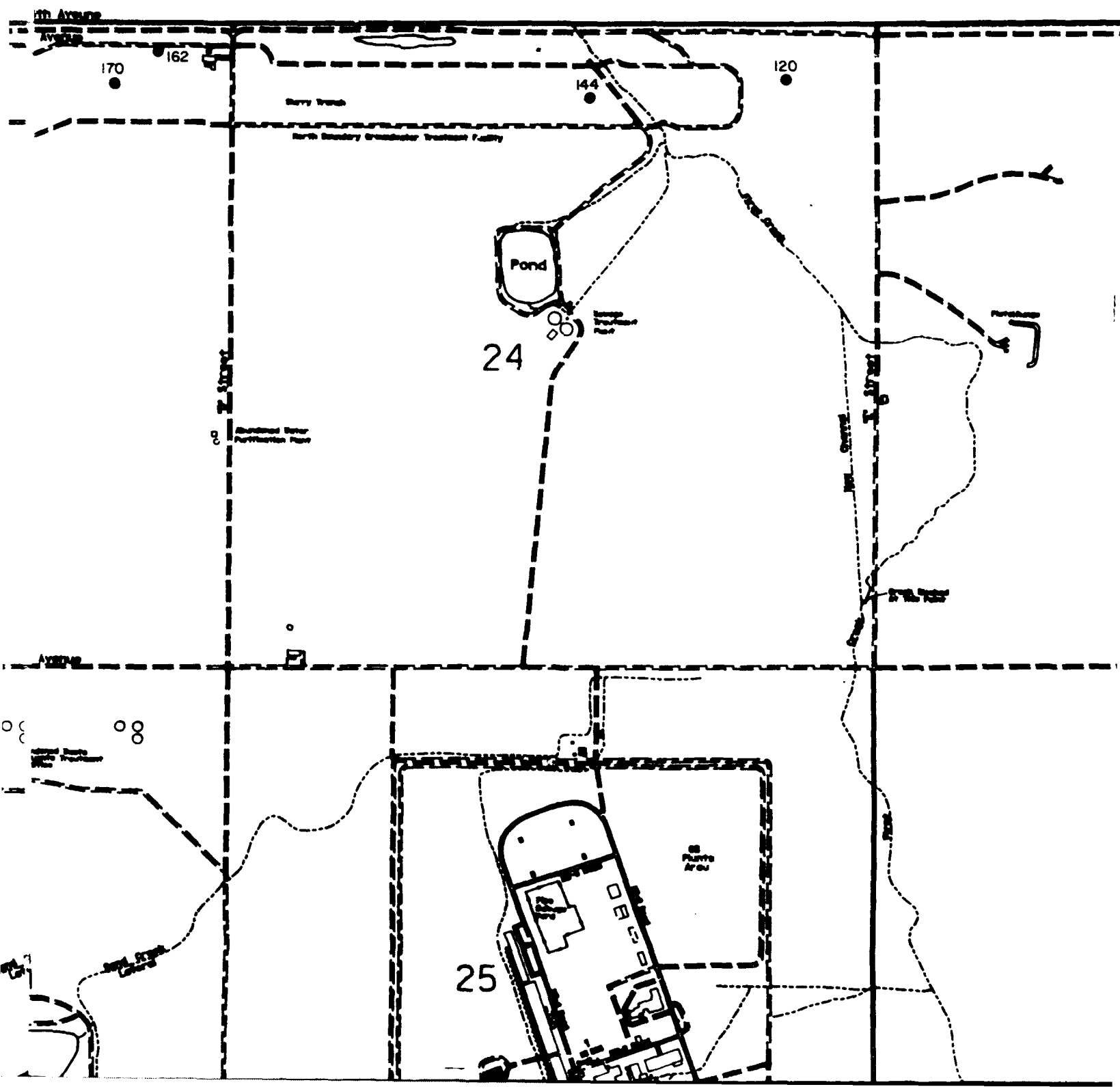
014

021
022
023

A01

26

27



4

2798000

East 38th Avenue

Tenth Avenue

19

20

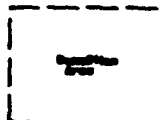
7th Street

Arrows Indicate

North Avenue

30

29



4

5

2200000

2200000

East 38th Avenue
Yacht Avenue

20

Y Street

2

Y Street

Buckley Road

190000

190000

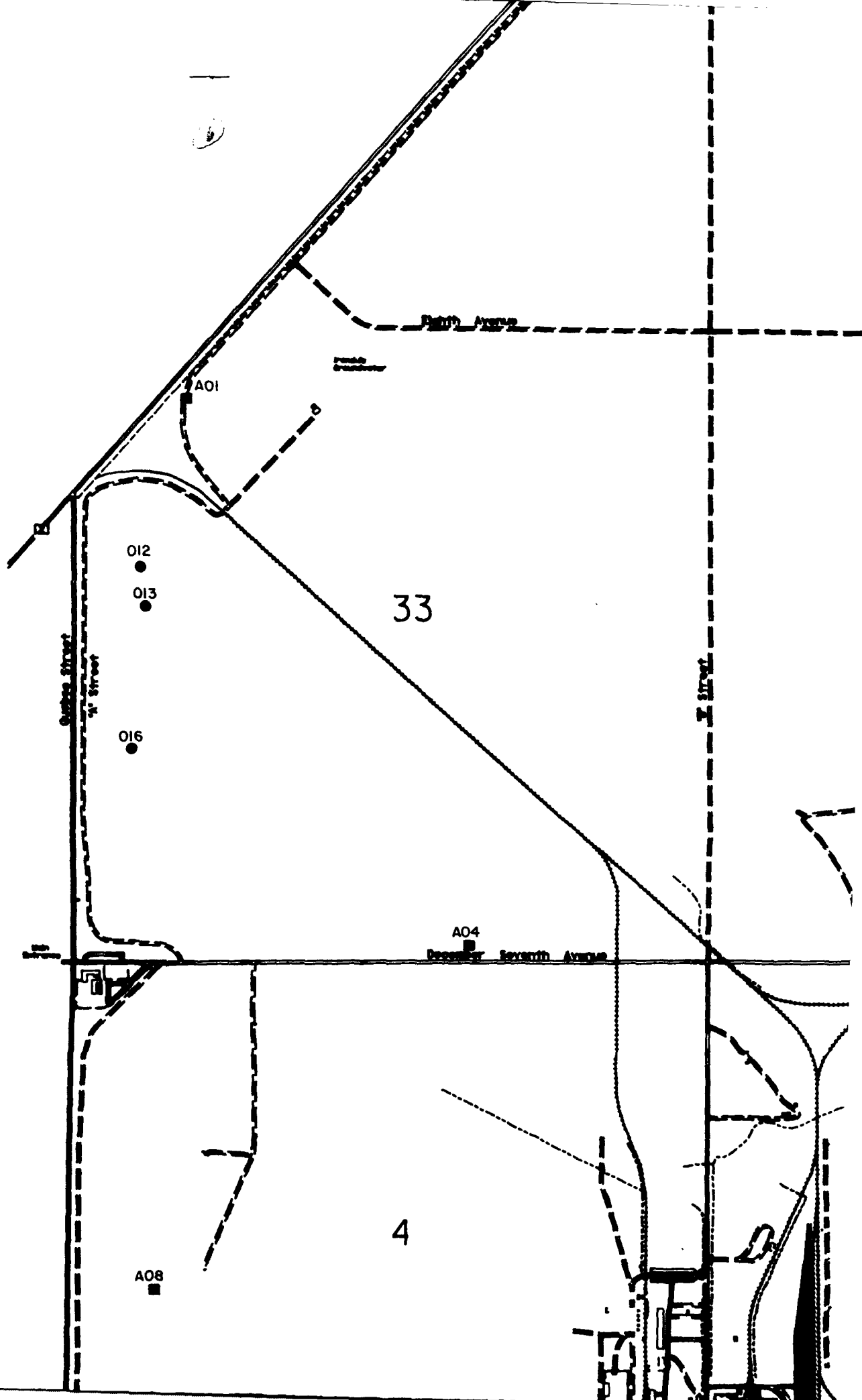
East Avenue

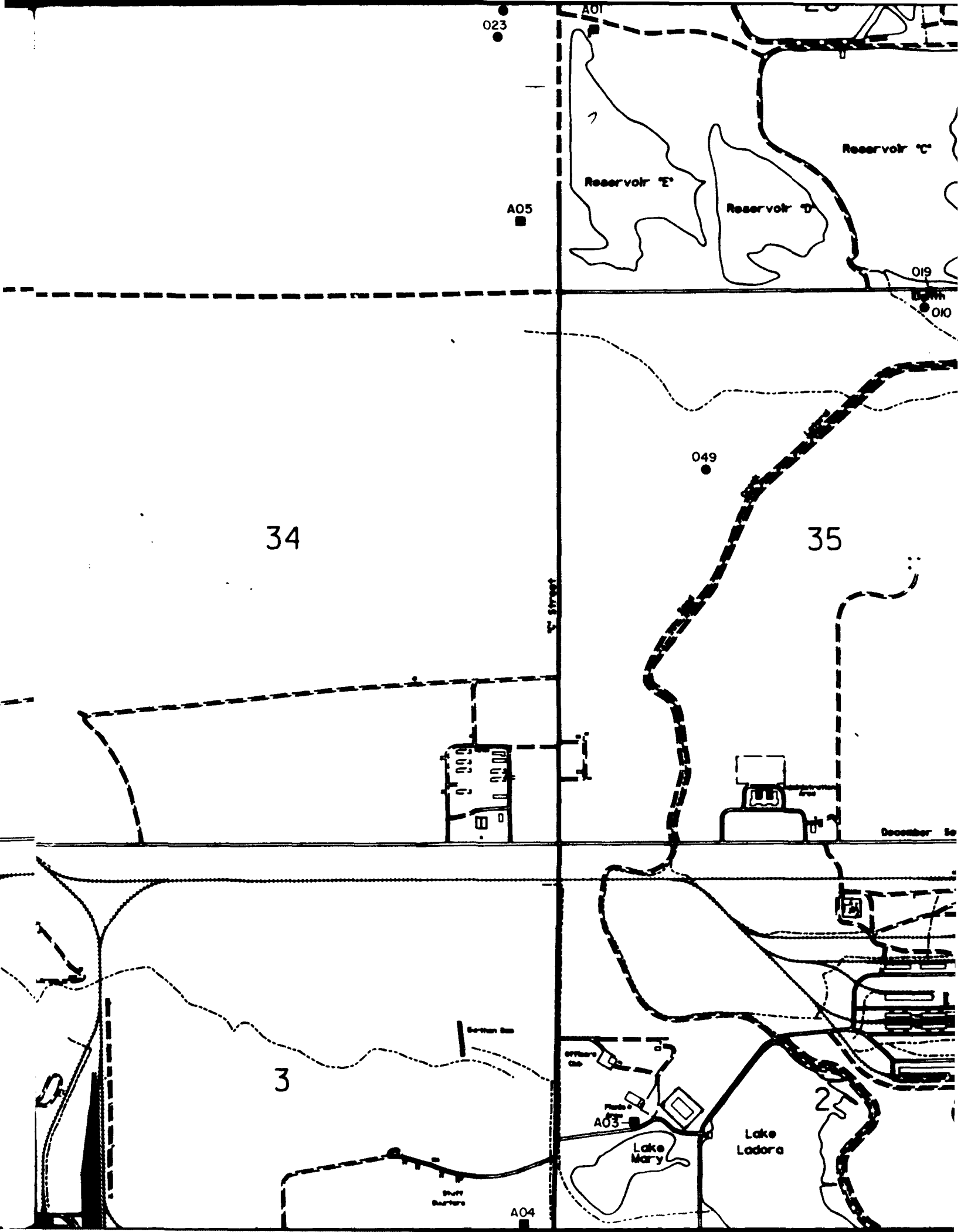
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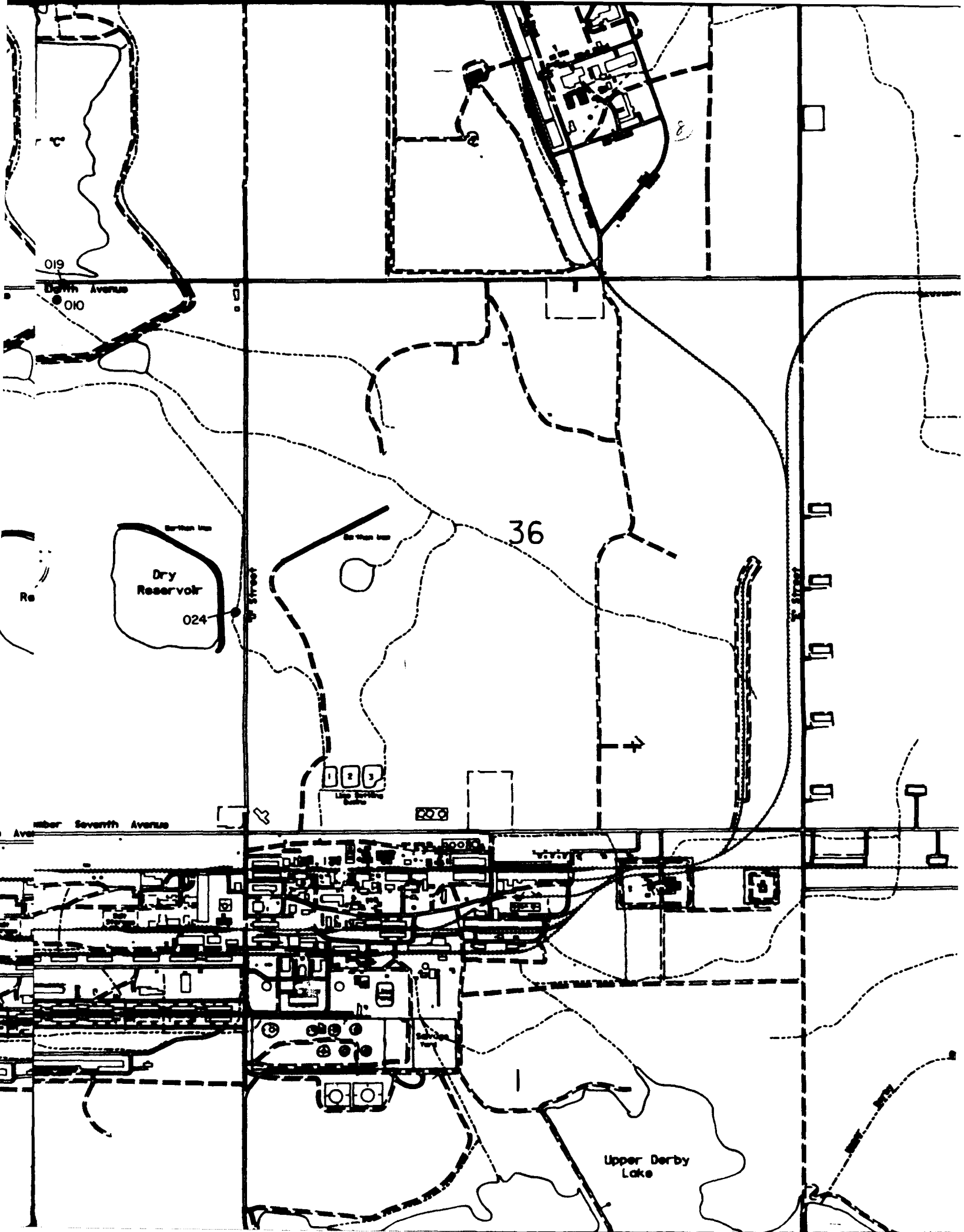
1000

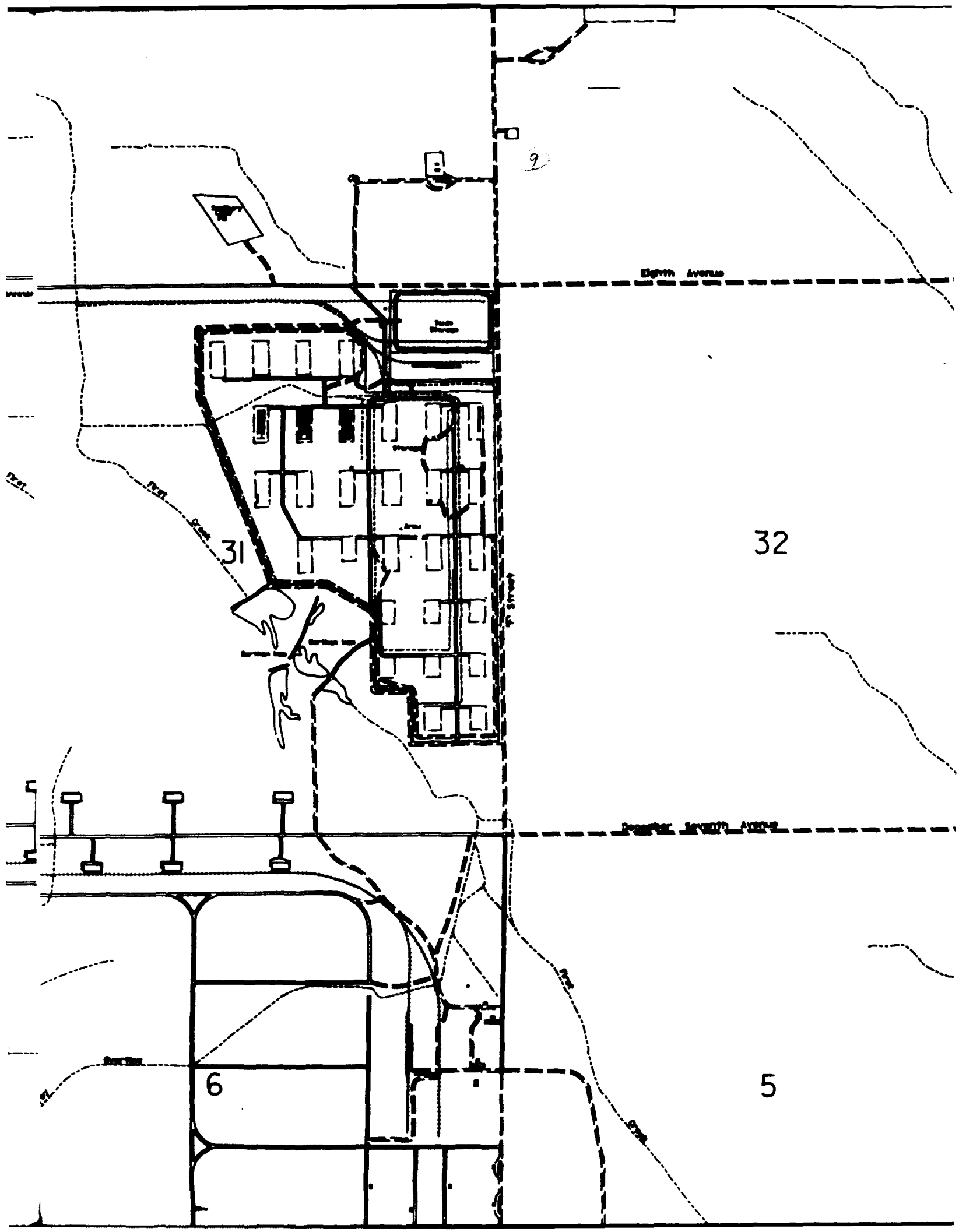
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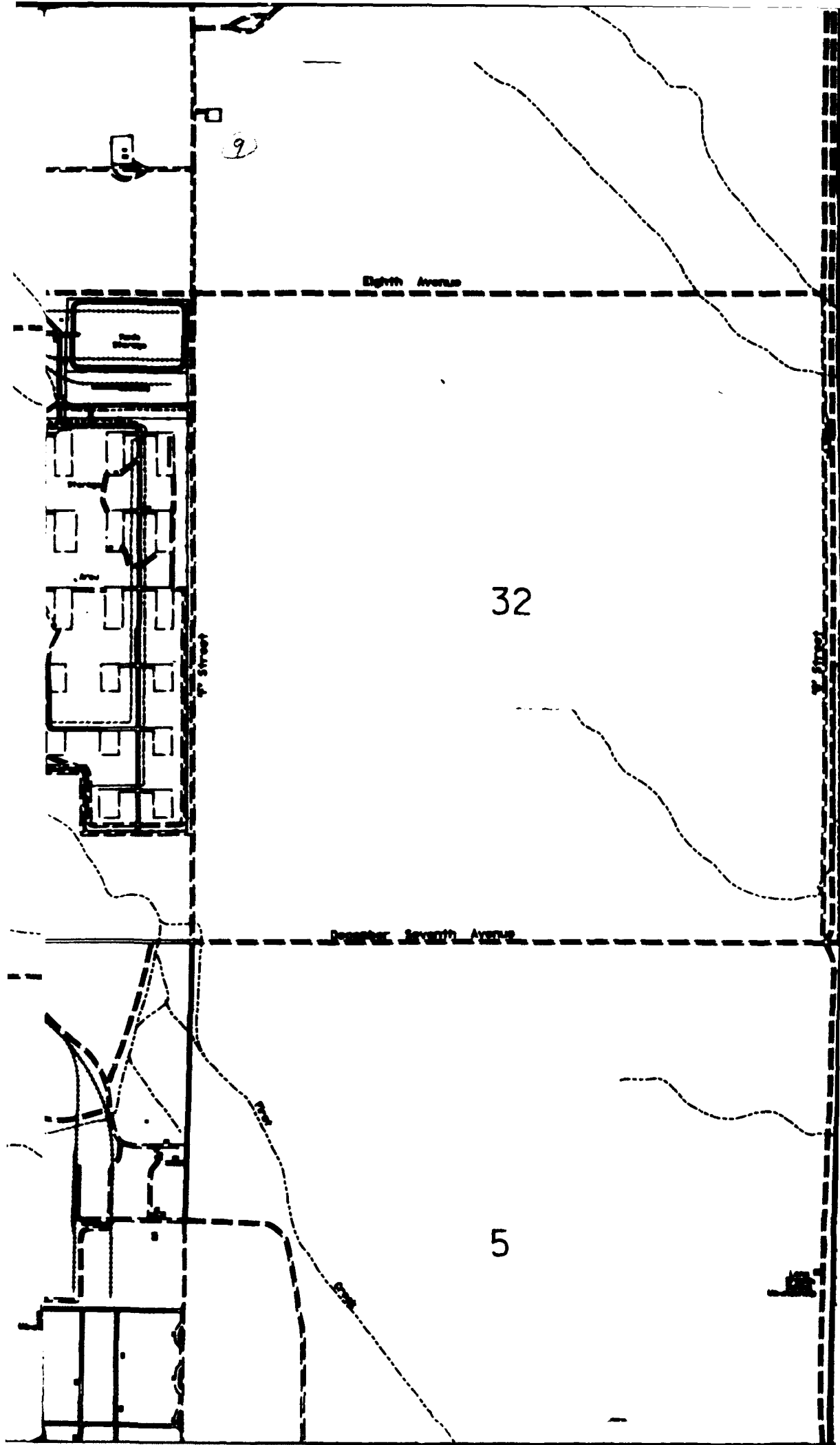
180000







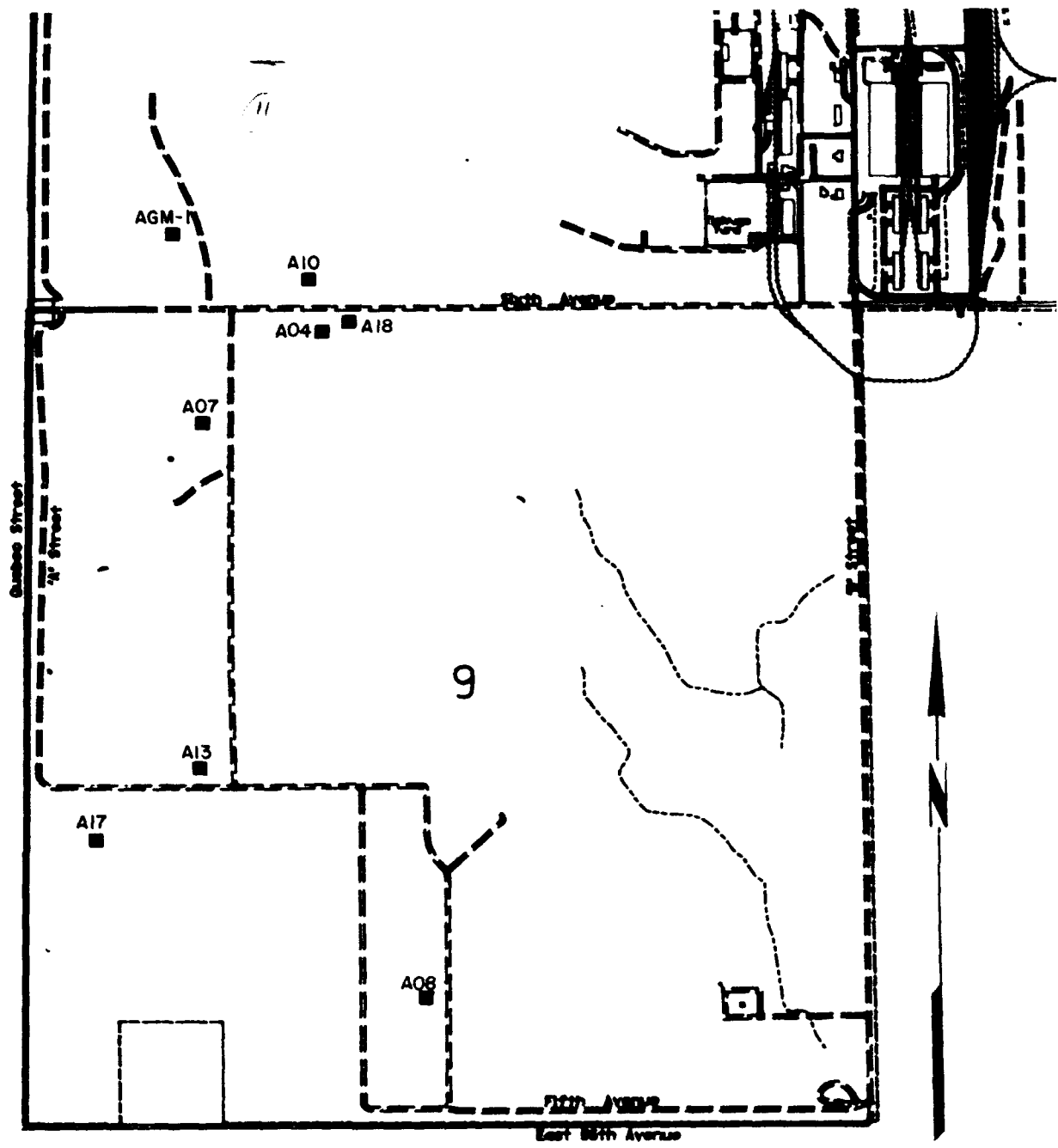


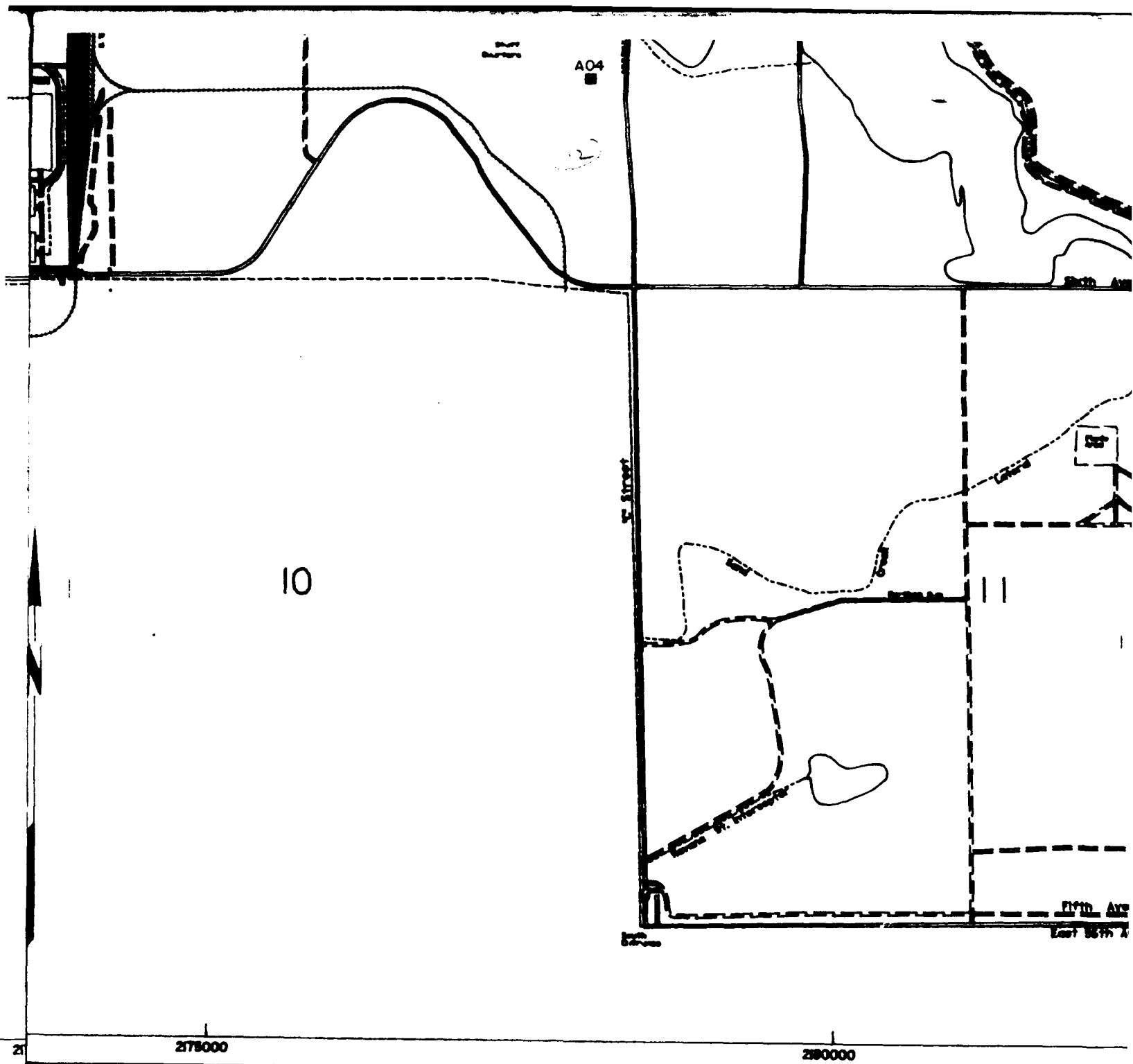


175000

170000

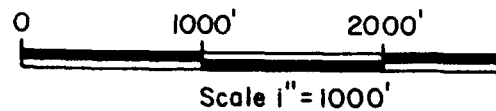
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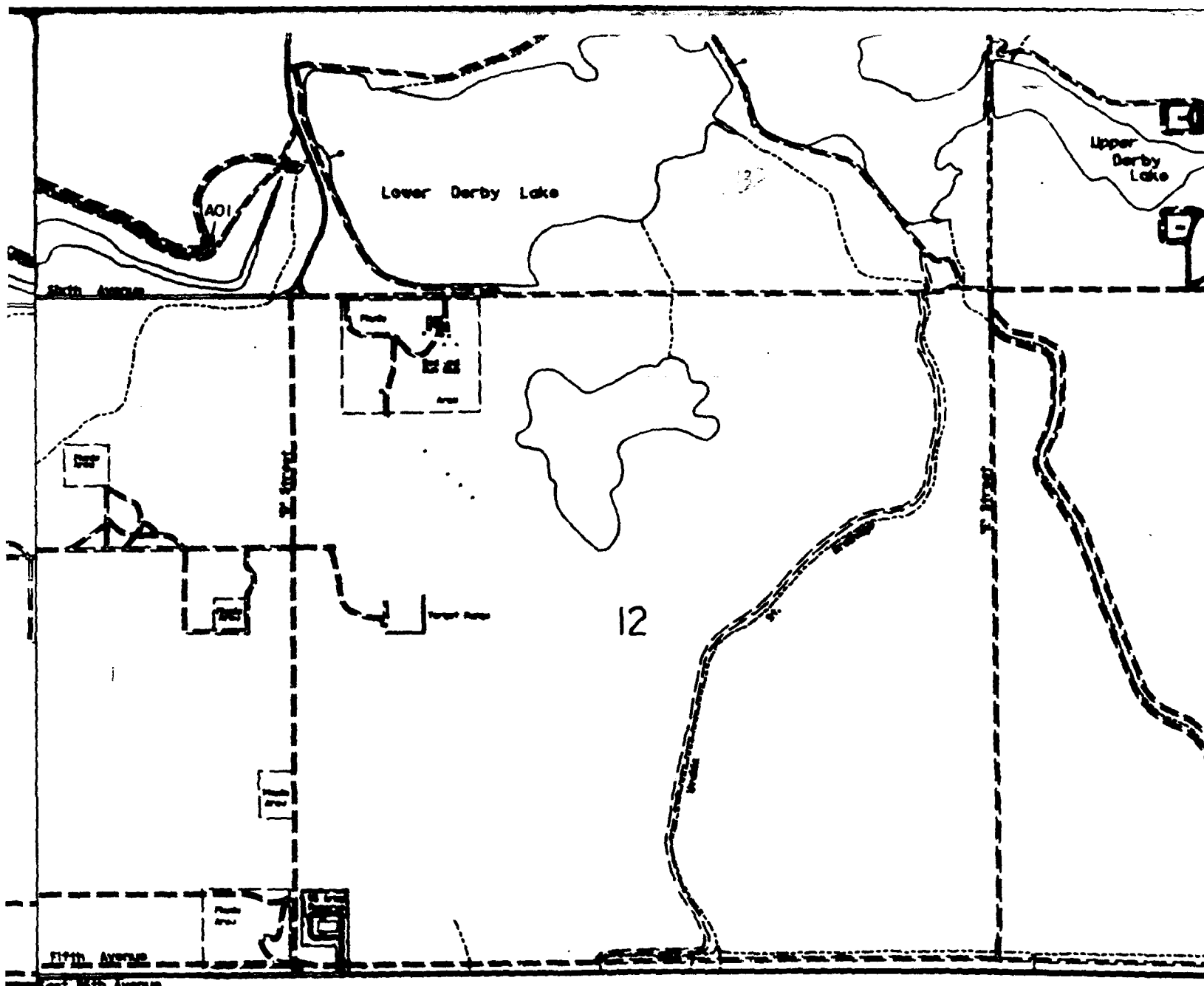




EXPLANATION

- A04 ■ Pre - 1942 Wells
- 049 ● Post - 1942 Wells





289000

289000



Prepared For:
Program Manager's Office for
Rocky Mountain Arsenal Cleanup
Aberdeen Proving Ground, Maryland

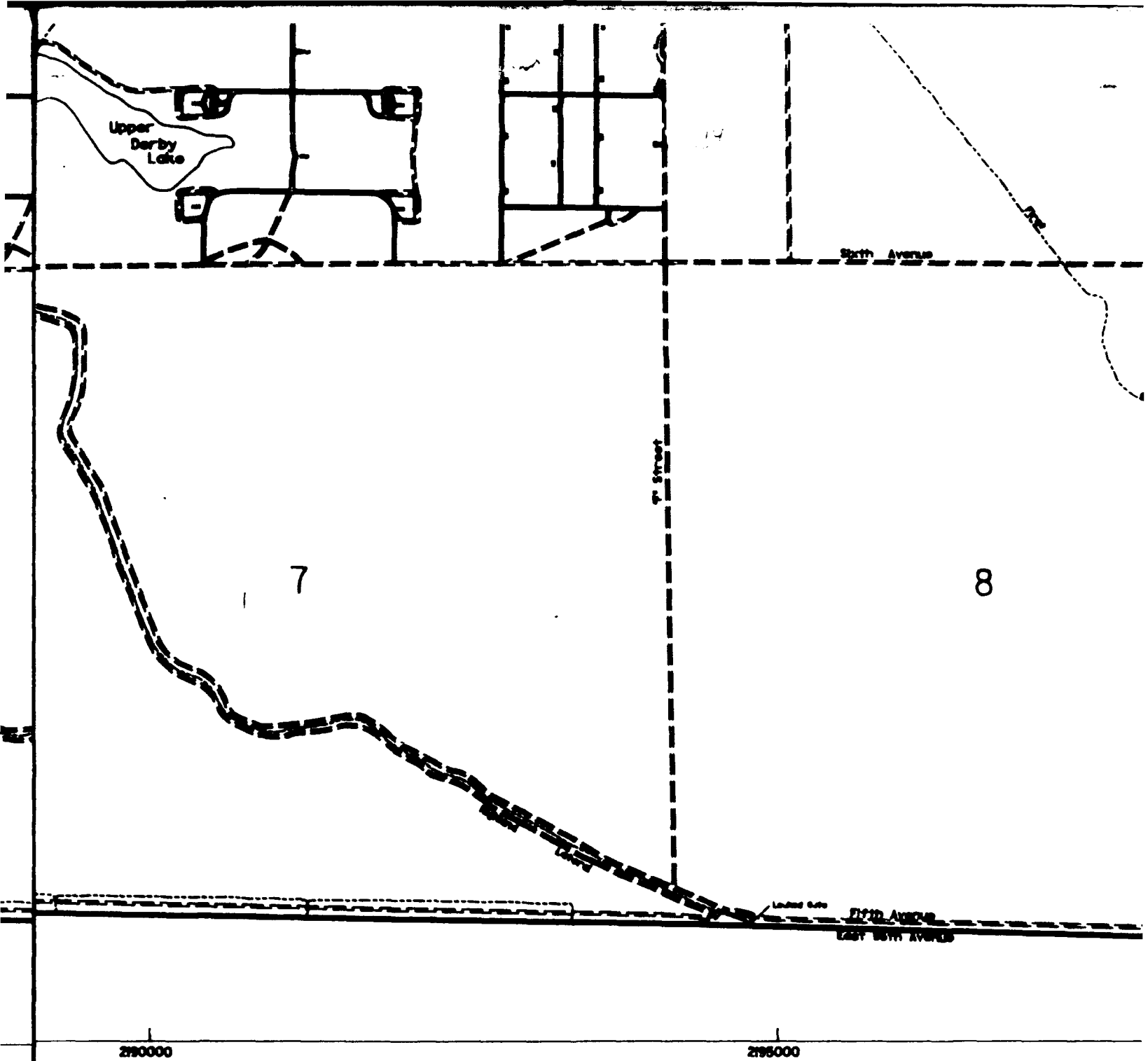
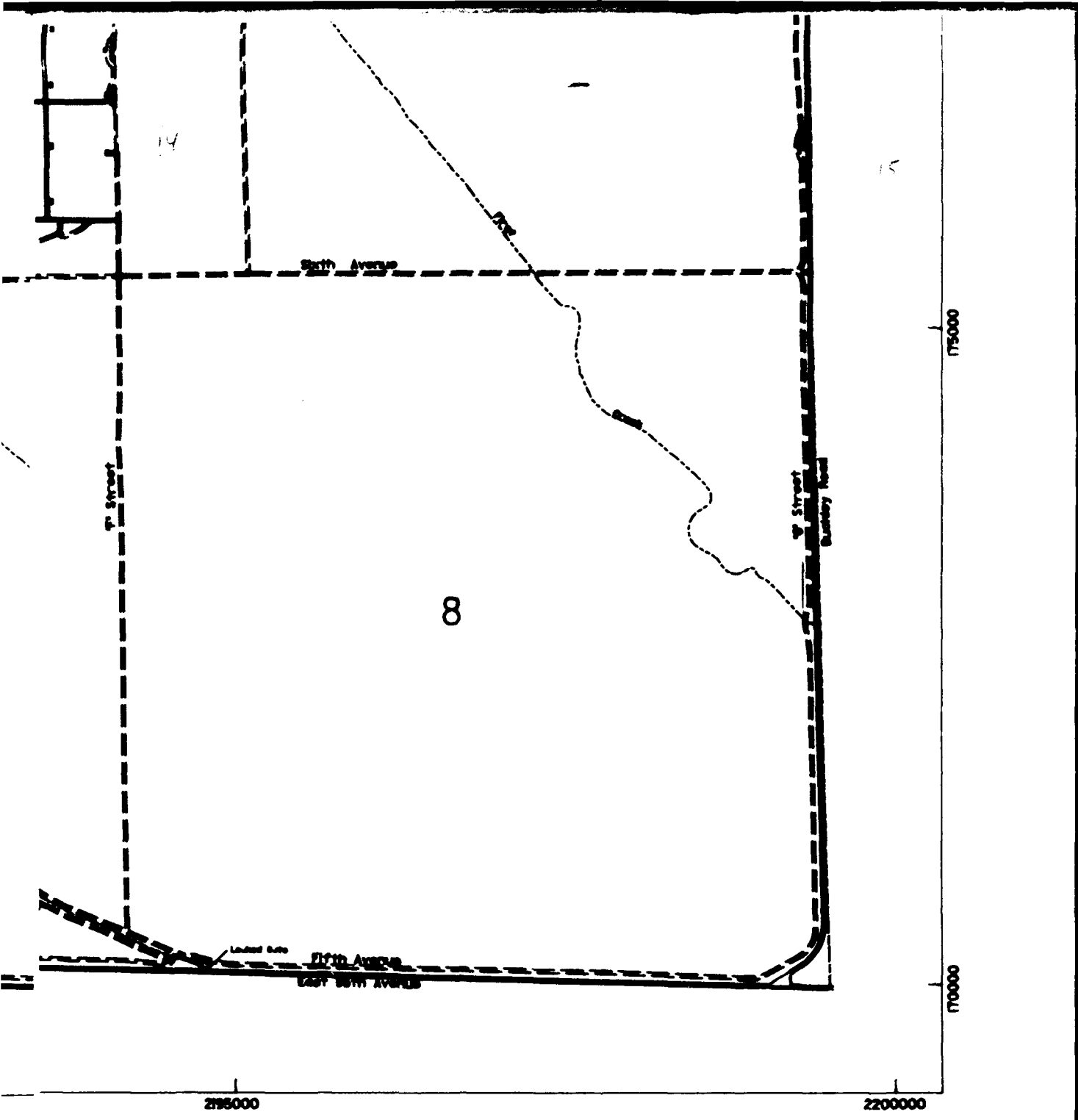


Plate 25

Wells Closed Under Task 37
Rocky Mountain Arsenal, Task 37
Prepared By: Geraghty & Miller, Inc.



25

Closed Under Task 37
Mountain Arsenal, Task 37
ed By: Geraghty & Miller, Inc.